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Grazing Fee Review and Evaluation

A Report From
The Secretary of Agriculture and
The Secretary of The Interior

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GRAZING FEE REVIEW AND EVALUATION
FINAL REPORT
1979-1985

Report
of
The Secretaries
of
Agriculture and The Interior

February 1986

Department of Agriculture
Forest Service

and

Department of The Interior
Bureau of Land Management

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PREFACE

MANDATE FOR THE GRAZING FEE STUDY

The Public Rangelands Improvement Act (PRIA) of 1978 (P.L. 95-514; 92 Stat. 1803) established the current formula for determining the grazing fee to be charged on public rangelands for a 7-year trial basis from 1978 through 1985. The PRIA requires the Secretaries of the Interior and Agriculture to report to Congress by December 31, 1985, ". . . their evaluation of the fee established in Section 6 of this Act [PRIA] and other grazing fee options, and their recommendations to implement a grazing fee schedule [system] for 1986 and subsequent grazing years."

ORGANIZATION OF THE REPORT

The report is organized in three parts. Part 1, Chapter 1, provides an overview of grazing fees on public rangelands; the public land sector of the western livestock industry and the roles played by the Forest Service (FS) and the Bureau of Land Management (BLM); the revenues and costs associated with range management; and the law and policy that establishes a basis for grazing fees. Information on the appraised market rental value is presented in Chapter 2.

Part 2 provides an evaluation of the PRIA fee formula and the alternative fee formulas that were examined. Chapter 3 contains the evaluation of the current fee system. Alternative fee systems are presented in Chapter 4. Chapter 5 includes the effects of fee level changes on grazing permittees, states, and selected local economies and an economic outlook. Chapter 6 evaluates alternative fee options against criteria of: equity to all interested and affected parties, permittee impacts, equity among livestock producers, administrative feasibility, consideration of other interests, and revenues for range improvement. Part 3 of the report is a summary of the public comments.

The recommendations of the Secretaries of Agriculture and the Interior for a grazing fee system will be submitted in a separate document.

PUBLIC REVIEW AND COMMENT

During the 30-day public comment period in April 1985, joint FS and BLM teams conducted briefings in 10 Western cities to provide information and solicit written comments on the Draft grazing fee report. Many concerns were expressed by the more than 7,000 respondents. Responses to major concerns have been incorporated within the Final report. Public review of the Draft report was critical of the Non Fee (Differential) Cost and the Livestock Price fee systems. These alternative fee systems have been dropped, and two other alternatives, the PRIA Updated Base Value Fee System and the Combined Value Fee System, have been added in the Final report. A copy of the Summary of Public Response to the 1985 Draft Grazing Fee Report as well as a copy of the

final fee report may be obtained from the Washington Offices of the Forest Service or the Bureau of Land Management as follows:

Director of Range Management
USDA-Forest Service
Room 601, RP-E
P.O. Box 2417
Washington, D.C. 20013

or

Chief, Division of Rangeland Management
USDI-Bureau of Land Management
18th & C Streets, N.W.
Washington, D.C. 20240

TABLE OF CONTENTS

PART 1 - BACKGROUND FOR GRAZING FEE STUDY	Page
Chapter 1. <u>Introduction</u>	1
Historical Background.	1
Grazing Fees and Permit System.	1
Western Livestock Industry.	2
Revenues and Costs of Rangeland Management	4
Distribution of Receipts.	4
Cost of Grazing Permit Administration	5
BLM Rangeland Program Cost "With and Without"	
Livestock Grazing	6
Permittee Investment In Range Improvements.	7
Law and Policy that Guide Fees	8
PRIA Evaluation Requirements	9
Chapter 2. <u>Appraised Market Rental Value of Grazing on Public Rangelands</u>	11
Purpose of Grazing Market Rental Appraisal	11
Definition of Fair Market Rental Value Used in the Appraisal	11
Function of the Appraisal.	11
Scope of the Appraisal	12
Appraisal Process and Conclusions.	12
 PART 2 - EVALUATION OF ALTERNATIVE GRAZING FEE SYSTEMS	
Chapter 3. <u>Current (PRIA) Fee System</u>	16
Basis of Formula	16
Evaluation of the Formula.	18
Role and Effects of the Combined Index.	18
\$1.23 Base Value.	19
Comparison of PRIA Fees with Westwide Indicated Market Value and the 1969 Fee System, 1979 - 1983 . .	21
Evaluation and Improvement of Formula Indexes.	23
Forage Value Index (FVI).	23
Issue No. 1: Annual Survey of Private Grazing Lease Rates	23
Issue No. 2: Use of Reporter Question.	23
Beef Cattle Price Index (BCPI).	25
Prices Paid Index (PPI)	27
Alternative Index Weights	29
Alternative Base Periods.	30
Use of Actual Data.	30
Year to Year Variability.	30
Formula Construction	30
PRIA With Technical Modifications	31

	Page
Chapter 4. Identification and Evaluation of Grazing Fee Options	32
Grazing Fee Systems Reviewed.	32
Grazing Fee Systems Considered.	33
PRIA Formula (No Change) Fee System	34
PRIA - Updated Base Value Fee System.	34
Description.	34
Application.	35
Modified PRIA Fee System.	35
Description.	35
Application.	36
Combined Value Fee System	37
Description.	37
Application.	38
Modified Market Value Fee System.	38
Description.	38
Application.	38
Competitive Bid Fee System.	39
Long-Term Competitive Bid System	40
Short-Term Competitive Bid System.	40
Alternative Implementation Schedules.	40
Chapter 5. Effects of Fee Level Changes, Current Conditions and The Economic Outlook	42
Permittee Income Effects.	42
Average Ranch Budgets.	42
Permittee Dependency On Federal Forage	43
Changes In Returns Above Short-term Cash Costs	43
Changes In Returns Above All Costs	44
Distribution of Aggregate Financial Impacts.	45
Livestock Herd Size.	46
Fee Costs, Forage Dependency and Livestock Prices.	47
Other Permittee Effects	49
Off-Ranch and Other Enterprise Income.	49
Effects on Permittee Asset Values.	49
Current Conditions and The Economic Outlook	51
Financial Problems	51
Herd Size Adjustment	51
Meat Production.	52
Cattle Inventory	52
Land Values.	53
Livestock Industry Stability	53

	Page
State and County Effects	53
Payments To States and Counties	53
State Personal Income and Employment Effects.	54
County Impact Analysis.	55
Chapter 6. Evaluation of Alternative Fee Systems Against Criteria	57
Equity to All Interested and Affected Parties	57
Permittee Impacts	60
Equity Among Livestock Producers.	62
Administrative Feasibility.	64
Consideration of Nonfederal Government and Community Interests.	64
PART 3 - PUBLIC COMMENTS	
Chapter 7. Summary of Public Response to the Draft Grazing Fee Report	66
REPORT DEVELOPMENT	
Technical Staff	68
Consultants	68
APPENDIX	
APPENDIX A. Updated Base Values	
A.1 Derivation of Updated 1966 Base Value for the PRIA - Updated Base Value Fee System.	69
A.2 Derivation of Base Value for the Combined Value Fee System	71
APPENDIX B. Technical Figures	
B.1 BLM Public Lands in the Western United States.	72
B.2 Forest Service Lands in the Western United States.	73
B.3 Information on Purchasing Grazing Fee Study Background Studies . .	74
B.4 Historical Summary of Grazing Fee Events	77
B.5 Summary of Vacant Allotment Information, Forest Service and BLM. .	80
B.6 Number of Public Land AUM's by State, 1982 - 1983.	81
B.7 Forest Service Maintenance Expenditures by Permittees, by Region, 1979-1983.	82
B.8 Differences Between Private Leased and Public Grazing Lands.	83
B.9 Summary of Public and Private Costs Per Animal Unit Month for Grazing in the Western States, 1966.	85
B.10 Percent of Beef Cattle Marketings, Percent of Private Leases Reported by AUM, and Percent of Combined Forest Service - BLM AUM's	86
B.11 Construction of the Input Cost Index (ICI)	87

B.12 Comparison of National Prices Paid for Production Index (PPI), PRIA's Prices Paid Index (PRIA-PPI), Consumer Price Index (CPI), and the Input Cost Index (ICI).	88 Page
B.13 Number of Acres of Government Grazing Lands and the Combined Average of State, Local, and Federal Agency Grazing Fees.	89
B.14 Grazing Fees Collected by State Land Boards or Education Departments for 1981	90
B.15 Summary of Statistics for State Wildlife Agencies and Other Federal Agencies, 1981	91
B.16 Sources and Use of Cash Income for General Livestock Farms in 13 Western States and Oklahoma by Debt/Asset Ratio, 1984. . .	92
B.17 Bureau of Land Management Administrative Units in Relationship to Pricing Areas.	93
B.18 Forest Service Administrative Units in Relationship to Pricing Areas.	94
 GLOSSARY.	 95
 REFERENCES.	 97

FIGURES

	Page
1.1 Distribution of Beef Cattle and Beef Cattle Producers in the United States, 1983.	2
1.2 Distribution of Cattle and Horse Operators by Herd Size, 1982.	4
1.3 BLM and Forest Service Direct Costs and Grazing Fee Receipts, 1982 - 1983.	5
1.4 BLM Rangeland Program Cost "With and Without" Livestock Grazing, 1983.	6
1.5 Combined BLM and Forest Service Direct Costs and Grazing Fee Receipts, 1982 - 1983.	7
1.6 Permittee Contributions for Range Improvements, 1979 - 1983.	7
1.7 Laws that Guide Grazing Fee Policy	8
 2.1 Westwide Pricing Areas	13
2.2 Appraisal Value Conclusions	15
 3.1 Data Used to Compute Grazing Fees with PRIA Formula and PRIA Values.	17
3.2 A Comparison of the PRIA Formula and the FVI	18
3.3 Comparison of PRIA and Net Returns Index	19
3.4 Summary Results of the 1966 Western Livestock Grazing Survey	21
3.5 Comparison of the PRIA Fee with the Westwide Indicated Market Values and the 1969 Grazing Fee System, 1979 - 1983.	22
3.6 Comparison of PRIA Values with the Indicated Market Values and the 1969 Grazing Fee System Values, 1979 - 1985.	22
3.7 Comparison of the 1983 Appraisal Values for Private Grazing Lease Rates and the June Enumerative Survey Values, 1978 - 1983.	24
3.8 Comparison of the Percent of AUM's, the Percent of Private Grazing Land Leases, and the Percent of Beef Cattle in the 11 Western States and the 5 Great Plains States	25
3.9 Monthly U.S. Prices of Livestock by Type, 1977 - 1984.	26
3.10 Comparison of the Factors Used in the National and the PRIA Prices Paid Indexes, and the Proposed Input Cost Index (ICI)	28
3.11 PRIA and the 1969 Formula Fee Values and PRIA Computed Using the Input Cost Index (ICI)	28
3.12 Comparison of Alternative Weightings of the Private Grazing Land Lease Rate and the Beef Cattle Price Index, 1983.	29
3.13 Comparison of the PRIA Formula, the PRIA Formula Using a Ratio of the Combined Index, and the FVI	31
 4.1 Grazing Fee Systems Reviewed in Formulating Alternatives to PRIA Fee System	32
4.2 Computation of Annual Index Values for FVI, BCPI, and ICI, and the Basic Price Data for these Indexes, 1980 - 1985.	35
4.3 Westwide Calculated Fees for PRIA - Updated Base Value Fee System, 1981 - 1985.	35
4.4 Westwide Values of the Modified PRIA Fee System, 1981 - 1985	36
4.5 Modified PRIA Calculated Grazing Fees for Individual Pricing Areas 1-6, 1981-1985	37
4.6 Westwide Calculated Grazing Fees for the Combined Value Fee System, 1981-1985.	38
4.7 Westwide Calculated Grazing Fees For the Modified Market Value Fee System by Animal Class, 1981 - 1985.	39

	Page
4.8 Calculated Grazing Fees by Animal Class and Pricing Areas with Modified Market Value Grazing Fee System, 1981 - 1985 . . .	39
4.9 Alternative Implementation Schedules to Phase in Fee Changes from the 1983 Grazing Fee Level.	41
5.1 Geographic Locations Represented By Ranch Enterprise Budgets . . .	42
5.2 Average Dependency Level of Permittee Livestock Businesses on Federal Rangeland for Annual Feed Supply in 13 Western States. .	43
5.3 Changes in Returns Above Variable Cash Costs for an Average Livestock Operation at Different Fee Levels, 1982. . . .	44
5.4 Changes in Returns Above All Costs for an Average Livestock Operation at Different Fee Levels, 1982.	45
5.5 Distribution of Permittees and a \$1 Increase In Fee Costs by Herd Size Class for All Permittees.	46
5.6 Impacts of Alternative Grazing Fee Levels on Cattle Enterprise's Return Above Variable Cash Costs of Public Rangeland Permittees, 1982.	47
5.7 Comparison of Grazing Fee Costs for an Average Cattle Operation at Different Dependency and Grazing Fee Levels, 1982	48
5.8 Comparison of Gross Income and Costs of Livestock Production at \$1.86 Grazing Fee, 1982.	49
5.9 Value of the Public Land Permit Observed in the Grazing Rental Appraisal, 1983	50
5.10 Payments To Western States at \$1.86 Fee Level and Potential Payments at Alternative Grazing Fee Levels	53
5.11 Summary of Reductions in Total Personal Income for All Western States (Sheep and Cattle Enterprises Combined), 1982	54
5.12 Summary of Reductions in Total State Employment for All Western States (Sheep and Cattle Enterprises Combined), 1982	55
5.13 Estimated Total County Personal Income Reductions and Percent Reduction of Total County Personal Income as the Result of Grazing Fee Increases, Base Fee Level of \$1.40 per AUM, 1982 . .	56
6.1 Westwide Grazing Fee System Values, 1983	57
6.2 Revenues Received from Grazing Fee Alternatives Compared to FS and BLM Permit Administration Costs, 1983	58
6.3 Alternative Grazing Fee Levels Compared to the Indicated Westwide Market Value of Grazing on Public Rangelands, 1983. .	59
6.4 Range Betterment Funds (50 Percent of the Grazing Fee Receipts). .	60
6.5 Changes in Permittee Returns Above Cash Costs, 1983 Fee Values.	61
6.6 Comparison of Cash Receipts, Costs, and Receipts Less Cash Costs For Federal Permittees and Western Livestock Industry Producers, 1982.	63
6.7 Changes in State Personal Income as a Result of Changes in the Grazing Fee	65
7.1 Respondents by Type, Public Response to the Draft Grazing Fee Report, 1985	67

PART 1 - BACKGROUND FOR GRAZING FEE STUDY

CHAPTER 1. INTRODUCTION

The U.S. Department of Agriculture, Forest Service (FS), and the U.S. Department of the Interior, Bureau of Land Management (BLM) administer livestock grazing on approximately 307 million acres of public rangelands located within the 16 Western States covered by the Public Rangelands Improvement Act (PRIA) of 1978. About 57 percent of this acreage is administered by the BLM and 43 percent by the FS. (Maps showing the location of BLM and FS rangelands are in Appendix B, Figures B.1 and B.2.) Public rangelands, as defined in the PRIA, are those lands administered by the FS or the BLM within the 16 Western States. Public rangelands are also referred to as Federal rangelands within this report to distinguish them from public lands which are leased for livestock grazing by Other Federal agencies and State Governments.

The 1980 Assessment of the Forest and Rangeland Situation in the United States documents that the Western States have about 70 percent of the forests and rangelands in the 48 contiguous States, but they provide 91 percent (720 million acres) of the total public and private range grazed. The public rangelands are divided into more than 30,000 allotments, ranging in size from less than 40 acres to more than 1 million acres.

HISTORICAL BACKGROUND

Grazing Fees and Permit System: Fees were first charged by the FS in 1906 for grazing on Forest Reserves. Fees were not charged on public domain lands (which later became the lands administered by the BLM) until 1936, 2 years after the passage of the Taylor Grazing Act. A summary of the history of grazing fees on the BLM and the FS lands is shown in Appendix B, Figure B.4.

Grazing fees for the BLM and the FS were established on different bases until 1969, when both Agencies implemented a fee system based on the Western Livestock Grazing Survey (WLGS) of 1966. The value determined through the 1966 WLGS was \$1.23 per AUM. The goal of both Agencies was to bring their fees to the \$1.23 level in 10 years by a series of 10 equal adjustments, while at the same time adjusting for the current level of private grazing land lease rates. The fee system lasted from 1969 until the passage of the PRIA in 1978. Four fee moratoriums occurred in this period as a result of congressional or Executive actions. The fee system established under the PRIA was the first to be legislated by the Congress instead of being established by the Secretaries of Agriculture and the Interior.

Grazing use on the public rangelands was originally established on the basis of prior use. Other qualifications which evolved from laws governing BLM range management policy and FS policy currently include: (1) ownership or control of livestock and sufficient base ranch property to provide feed for animals during the time they are not grazed on public rangelands, and (2) need for additional grazing to roundout yearlong ranching operations.

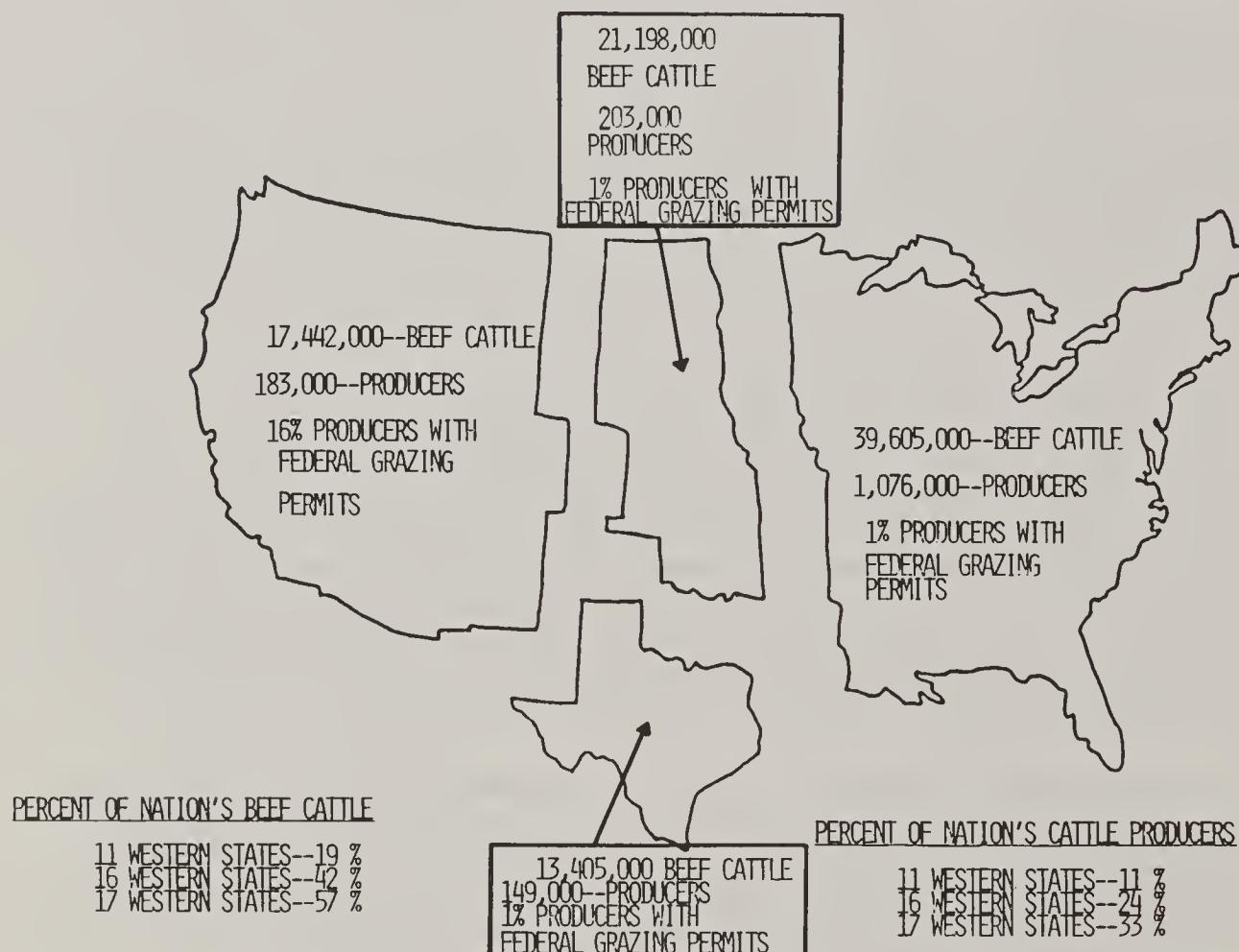
The FS and the BLM require that permittees manage livestock to conform to prescribed plans, developed in consultation with permittees, which specify the number of animals to be grazed and the period during which grazing can occur.

Grazing permits or leases are for a 10-year period. Generally, current holders of the permits have first priority for renewal.

Western Livestock Industry: Forest Service and BLM grazing statistical records showed that during the 1982 grazing year, approximately 27,000 farmers and ranchers grazed livestock on the public rangelands, with about 15 percent of these producers grazing livestock on both FS and BLM lands. These 27,000 farmers and ranchers, when compared with the 1983 Agricultural Statistics (USDA Agricultural Statistics), represented 7 percent of the 386,000 livestock producers in the 16 Western States and 2 percent of the 1.6 million cattle producers in the United States. In 1982, 21.5 million AUM's of grazing were permitted on public lands in the Western States. This level of permitted use represented 10 percent of the Nation's total rangeland forage and 2 percent of the total feed consumed by cattle in the United States.

The distribution of beef cattle, beef cattle producers, and permittees is shown on Figure 1.1. The number of FS animal months (AM's) and BLM AUM's by State are shown in Appendix B, Figure B.6. An explanation of the conversion factors used is also provided in Appendix B, Figure B.6.

Figure 1.1: Distribution of Beef Cattle and Beef Cattle Producers in the United States, 1983



DISTRIBUTION OF BEEF CATTLE AND BEEF CATTLE PRODUCERS IN THE UNITED STATES, 1983

While the Western States do not dominate the Nation's livestock industry, the relationship between the western livestock industry and the availability of public range is important both regionally and locally (Clawson and Held, 1957). The availability of public rangelands helps promote the stability of family farms and ranches. The availability of public range forage contributes to the livelihood of full-time operators who are substantially dependent on it for livestock forage. For part-time operators, the public range may help maintain livestock operations that supplement family income. In many western communities, livestock farming and ranching operations continue in their traditional role of providing the primary economic base.

The importance of public range also varies by the type of animal being grazed. Nearly half the sheep producers who own more than 2,500 head of sheep use public range, which provides about 42 percent of their annual forage requirements. The 1980 National Assessment of the Forest and Rangeland Situation in the United States showed that the FS and the BLM together supplied 17 percent of the forage consumed by beef cattle in the Western States. About one-third of the beef cattle in the Western States graze at least part of the year on public rangelands (USDA-FS, 1980).

Public grazing is a highly significant portion of total grazing in some Western States. For example, 88 percent of the cattle produced in Idaho, 64 percent in Wyoming, and 63 percent in Arizona graze at least part of the year on public rangelands. Dependency on public grazing lands by permittees is derived from livestock enterprise budget data developed by the USDA Economic Research Service (Gee, 1984). The dependency of both the cattle and sheep operators on public land grazing is discussed under the Permittee Dependency on Federal Forage section in Chapter 5.

In numerous local areas in the West, the operating size of many livestock operations often is affected by the amount of Federal range available during seasons of feed shortage on privately owned lands. Such critical periods may occur in the fall prior to hay feeding, in the summer when forage on private lands is low in nutritive value compared to forage on public ranges at higher elevations, and in the spring when private lands are needed to produce next winter's feed.

The size of the livestock operations dependent upon the public rangelands varies. Based on FS and BLM records, Figure 1.2 shows public rangeland grazing by herd size for cattle and horse permittees for both the FS and the BLM. While 49 percent of BLM permittees have less than 100 head, only 35 percent of the FS permittees have less than 100 head. About 10 percent of the largest BLM permittees (over 500 head) use 47 percent of the BLM AUM's, while the FS group with 100 to 500 head graze 48 percent of the National Forest AUM's (FS Statistical Records; Gee, 1984; and BLM Range Management Automated System.)

Based on a study by Utah State University (Godfrey, Nielsen, and Lytle, 1985), less than 2 percent of BLM and FS allotments are vacant. Vacancy is more pronounced in sheep allotments (4 percent) than in cattle allotments (1 percent). Vacancy by agency and State is shown in Appendix B, Figure B.5. Vacancy is defined as allotments that have not had any authorized grazing use for 3 years as distinguished from total authorized nonuse for a year or more, or varying amounts of nonuse on a recurring basis. Authorized nonuse averaged about 17 percent of annual use for the 1981-1983 period for both Agencies.

Figure 1.2: Distribution of Cattle and Horse Operators by Herd Size, 1982

Herd Size	Number of Permittees (%)	Number of AUM's (%)
Bureau of Land Management		
Less than 100	9,200 (49)	1,729,100 (16)
100 to 500	7,800 (41)	3,998,400 (37)
Over 500	1,800 (10)	5,079,100 (47)
BLM Total	18,800 (100)	10,806,600 (100)
Forest Service		
Less than 100	4,400 (35)	896,200 (11)
100 to 500	6,700 (53)	3,910,700 (48)
Over 500	1,500 (12)	3,340,400 (41)
FS Total	12,600 (100)	8,147,300 (100)
FS Total converted to AM's <u>1/ ,2/</u>		6,789,500
Total for Billing Purposes	31,400	17,596,100

1/ For FS billing purposes, convert AUM's to Animal Months (AM's) by dividing by a factor of 1.2. (Sources: FS Statistical Records; Gee, 1984; and BLM Range Management Automated Records System.)

2/ BLM AUM equal to FS AM.

REVENUES AND COSTS OF RANGELAND MANAGEMENT

Distribution of Receipts: Permittees and lessees are charged for public rangeland grazing use according to the number of AUM's of forage they are authorized to use. Analysis of FS and BLM fiscal receipts reveals that in Fiscal Year 1982, grazing fee collections totaled \$31,634,000, which was distributed as follows: \$15,322,000 was deposited to the Range Betterment Fund; \$6,328,000 was returned to the States and counties in which it was collected; \$1,076,000 was allocated for forest roads and trails; \$538,000 was allocated for special assessments; and \$8,370,000 was retained by the U.S. Treasury.

Grazing fee receipts are distributed according to legislative requirements. The FS distributes its grazing fee receipts as follows: 25 percent to the States for distribution to the county of origin for roads and schools, 25 percent to the U.S. Treasury, and 50 percent into the Range Betterment Fund to be appropriated the following year. The Range Betterment Funds are returned to the FS Region of origin. One-half the funds are returned to the Forest where the fees were collected and the remaining amount distributed among the Forests at the discretion of the Regional Foresters.

Grazing fees collected by the BLM are distributed under Section 3 (grazing permits) of the Taylor Grazing Act of 1934, as follows: 50 percent to the Range Betterment Fund; 12.5 percent to the States where the fees were collected; and 37.5 percent to the U.S. Treasury. Under Section 15 (grazing leases) of the Act, 50 percent of the fees collected are distributed to the

Range Betterment Fund and 50 percent are returned to each State where the fees are collected. Range Betterment Funds are returned to the BLM District where they were collected. Although the BLM State Directors may redistribute funds among Districts to meet short-term needs, each District must receive its full proportional share of Range Betterment Funds within a 5-year period.

The FS and the BLM use the Range Betterment Funds, other appropriated funds, and contributions to improve the public rangelands. This is accomplished through implementation of intensive grazing management methods and initiation of improvement practices, such as brush control, seeding, fencing, and the development of water sources.

Cost of Grazing Permit Administration: In addition to the funds that the Agencies spend on range improvements, the cost elements involved in administering grazing permits are allotment planning and inventory, use supervision and management, and program management. Figure 1.3 shows by agency the average AUM weighted costs for these elements for 1983, exclusive of the nonlivestock elements of the FS and BLM range programs. Average costs were \$2.87 per AUM as opposed to a 1983 grazing fee of \$1.40 per AUM.

Figure 1.3: BLM and Forest Service Direct Costs and Grazing Fee Receipts, 1982-1983

Cost/Receipt Component	----- BLM -----		----- FS -----	
	1982	1983	1982	1983
-----(000's dollars)-----				
Allotment Planning and Inventory	\$5,630	\$4,058	\$4,917	\$4,702
Grazing Management	\$21,139	\$21,343	\$14,715	\$14,061
Range Improvements	<u>\$5,500</u>	<u>\$9,353</u>	<u>\$9,822</u>	<u>\$7,391</u>
Total Costs	\$32,269	\$34,754	\$29,454	\$26,154
Total Receipts <u>1/</u>	\$20,878	\$16,700	\$10,756	\$8,056
State/County Shares <u>2/</u>	\$ 3,639	\$ 2,979	\$ 2,689	\$2,014
Net Federal Receipts	-\$15,030	- \$21,033	- \$21,387	- \$20,112
----- (\$/AUM)-3/-----				
Allotment Planning and Inventory	\$0.42	\$0.31	\$0.61	\$0.58
Grazing Management	\$1.57	\$1.63	\$1.84	\$1.73
Range Improvements	<u>\$0.41</u>	<u>\$0.71</u>	<u>\$1.23</u>	<u>\$0.91</u>
Total Costs Per AUM	\$2.40	\$2.65	\$3.68	\$3.22

1/ National Forest receipts only.

2/ State and County Share of Federal Grazing Fee Receipts

3/ National Forest System costs and AUM's (includes 1.4 million National Grassland AUM's).

BLM Rangeland Program Cost "With and Without" Livestock Grazing: Figure 1.4 shows the cost calculations "with and without" permitted livestock grazing on BLM administered public rangelands. The cost assumptions and methodology used in this analysis differ from the approach used in Figure 1.3, and are based on the concept that certain basic rangeland program activities and costs would be required regardless of whether there is permitted livestock grazing use. These include such legislatively defined requirements as providing baseline inventory data, monitoring and reporting ecological range condition, and preventing and detecting unauthorized grazing use. The cost of these activities was estimated to be about \$17.7 million in 1983. This cost is subtracted from the BLM total range program costs to arrive at the real costs associated with only permitted livestock grazing.

The cost analysis also uses the concept that the Federal Government would have to absorb permittees maintenance and replacement costs of water developments that directly benefit public resources such as wildlife, and wild horses and burros. This cost was estimated to be \$5.7 million in 1983. Since this cost would have to be absorbed by the Government if there was not permitted livestock grazing, it was counted as a cost savings. This savings was subtracted from range program costs to derive the real cost of the permitted grazing use. Dividing the real livestock grazing cost by the permitted AUM's resulted in a cost of \$2.44 per AUM.

Figure 1.4: BLM Rangeland Program Cost "With and Without" Livestock Grazing, 1983

	Rangeland Program Costs	Without Livestock Grazing	Real Cost of Livestock Grazing
	(\\$000)	(\\$000)	(\\$000)
Grazing Administration	34,754	13,901	20,853
General Administration	9,384	3,753	5,631
Range Improvements	11,200	0	11,200
Totals	55,338	17,654	37,684
User Maintenance Savings			-5,665
Net Cost of Livestock Grazing			\$32,019
Unit Cost per AUM:	\$32,019 divided by 13,105,219 AUM's = \$2.44/AUM		

While FS and BLM range program costs are separable, they also may be viewed jointly. Combined FS and BLM costs are shown in Figure 1.5.

Figure 1.5: Combined BLM and Forest Service Direct Costs and Grazing Fee Receipts, 1982-1983

Cost/Receipt Component	1982	1983
-----(000's dollars)-----		
Allotment Planning and Inventory	\$10,547	\$8,760
Grazing Management	\$35,854	\$35,404
Range Improvements	\$15,322	\$16,744
Total Costs	\$61,723	\$60,908
Total Receipts 1/	\$31,634	\$24,756
State/County Shares 2/	\$ 6,328	\$ 4,993
Net Federal Receipts	-\$36,417	-\$41,145

1/ National Forest and BLM receipts only.

2/ Western States and Counties share of Federal Grazing Fee Receipts

Permittee Investment In Range Improvements: Permittees and lessees may cooperate with improvement investments through contributions of money, time, labor, and materials. The regulations for each Agency provide for private investment, when in the public interest. Permittees, thus, have an opportunity to invest their own capital where they can realize capital recovery and profit on their investments. Forest Service grazing statistical records and BLM's fiscal records (Job Documentation Reports) showed that permittee combined contributions averaged \$0.16 per AUM toward range improvement investments during the PRIA trial period. (See Figure 1.6.)

Figure 1.6: Permittee Contributions for Range Improvements, 1979-1983

Agency	1979	1980	1981	1982	1983	Total
----- Dollars Contributed (000's dollars) -----						
BLM	\$940	\$1,213	\$1,237	\$1,258	\$1,281	\$5,930
FS	<u>\$1,259</u>	<u>\$1,367</u>	<u>\$1,531</u>	<u>\$2,761</u>	<u>\$1,451</u>	<u>\$8,369</u>
Total	\$2,199	\$2,580	\$2,768	\$4,019	\$2,732	\$14,299
----- Dollars per AUM -----						
BLM	\$0.09	\$0.12	\$0.12	\$0.12	\$0.12	\$0.11
FS	\$0.20	\$0.24	\$0.23	\$0.25	\$0.22	\$0.21

Both Agencies require permittees and lessees to maintain fences and other structural improvements that benefit livestock on grazing allotments. For the years 1979 to 1983, FS grazing statistical records reported that the National

Forest permittees in the 16 Western States spent an average of \$0.30 per AUM each year on maintenance of range improvements. (Maintenance expenditures by Forest Service Region are shown in Appendix B, Figure B.7. Similar data are not available for the BLM.)

Permittee cooperation is an essential element in implementing improved grazing management systems. Maintenance of improvements by the range user allows the limited appropriated funds (including Range Betterment Funds) to be used for new construction. This policy allows private investment and hastens the improvement of public rangeland condition.

LAW AND POLICY THAT GUIDE FEES

Figure 1.7 lists the laws that guide the Administration's approach to grazing fees. Several of the laws described refer to fees that are "reasonable." Many ranchers grazing livestock on the public rangelands believe that a reasonable fee must take into consideration the costs of purchasing a public grazing permit (from the existing permit holder) as a reasonable cost of grazing public lands. In 1968, Pankey Land and Cattle Company filed suit against the Secretaries of the Interior and Agriculture, seeking an injunction against the new fees claiming they failed to meet the legal requirement of reasonableness because they failed to consider the costs of the permit. The U.S. District Court for New Mexico held in favor of the Secretaries, ruling that the Agencies had considered all factors "related to the reasonableness of the fees." The courts also ruled that the Government was not obligated to compensate permittees for actions which reduce the permit value.

Figure 1.7: Laws That Guide Grazing Fee Policy

Date	Law	Policy Statement
1978	Public Rangelands Improvement Act	(BLM and FS) Established a fee on a trial basis, which Congress determined would represent the economic value of the land to the user. In establishing a fee based on economic value, Congress stated that "to prevent economic disruption and harm to the western livestock industry, it is in the public interest to charge a fee for livestock grazing . . . which is based on a formula reflecting annual changes in the costs of production [and beef prices]."
1976	Federal Land Policy Management Act (FLPMA)	(BLM) Declared that it is a general policy that ". . . the United States receive fair market value of the use of public lands and their resources unless otherwise provided by statute." The FLPMA also required the Secretaries to study the grazing fee issue and in making the study, "take into consideration the costs of production, . . . differences in forage values, and other factors which relate to the reasonableness of such fees."

Date	Law	Policy Statement
1952	Independent Offices Appropriation Act	(BLM and FS) Required agencies that provided goods and services to "be self-sustaining to the full extent possible. . . [and for the fees charged] to be fair and equitable taking into consideration direct and indirect cost to the Government, value to the recipient, public policy or interest served, and other pertinent facts" In interpreting this law, Office of Management and Budget, Circular 25, states "Where federally owned resources or property are leased or sold, a fair market value should be obtained. Charges are to be determined by the application of sound business management principles, . . . in accordance with comparable commercial practices. Charges . . . may produce net revenues to the Government."
1934	Taylor Grazing Act	(BLM) Provides for payment of a "reasonable fee." The Secretary of the Interior is to account for "the extent to which such districts yield public benefits over and above those accruing to the users of the forage resources for livestock purposes."
1897	Organic Act	(Forest Service) "The Secretary of Agriculture should make such rules and regulations to regulate their [forests] occupancy and use . . ."

PRIA EVALUATION REQUIREMENTS

In 1978, the PRIA established the formula for determining the grazing fee to be charged on the public rangelands. The formula, which retained the 1966 base value of \$1.23, is adjusted by annual changes in the private grazing land lease rate together with annual fluctuations in the costs of beef production and the prices received for beef. (See Chapter 3 for explanation of the formula.) By including the indexes of the costs of livestock production and beef cattle prices, Congress intended to implement a formula based, in part, upon a permittee's ability to pay. The House Report No. 95-1122, "Improving the Range Conditions of the Public Grazing Lands," House Report stated that this would help prevent ranchers who depend on public land use from being forced out of business by the combined pressures of high production costs and low beef prices. The report went on to say that a lower fee would contribute to improved range condition by encouraging private investment and by discouraging overgrazing and trespassing.

The PRIA formula, however, was not exempt from the public controversy traditionally surrounding public land grazing fees. In House Report No. 95-1122, the House Committee on the Interior and Insular Affairs acknowledged and responded to the controversy in the following passage:

"The Committee is aware, however, that many groups and individuals concerned with the improvement of the range disagree with the concept of pegging grazing fees to beef prices and the ranchers' ability to pay, and do not believe lower fees will eliminate overgrazing . . ."

"To accommodate these concerns, the committee agreed to put its formula on a 7-year trial basis only, from 1979 to 1985. This 7-year trial period will give all sides an opportunity to study the effects of tieing the fee to beef prices, and also allow the Secretaries to refine their data on the value of Federal grazing lands as compared to privately owned lands."

At the end of the trial period, the Secretaries are required to report to Congress on this issue and to recommend a fee schedule for 1986 and subsequent grazing years.

Specifically, the four tasks the Agencies undertook were:

1. an appraisal of the public rangelands to estimate the rental value of public lands for grazing;
2. an evaluation of the PRIA grazing formula with specific emphasis on the forage value index, the beef cattle price index, and the prices paid (cost of production) index;
3. an identification and evaluation of other governments' grazing fees; and,
4. an analysis of the economic impact of grazing fee levels on the public land-based livestock industry, selected counties, and States in the Western United States.

Information on purchasing copies of the background studies conducted in support of the fee study is provided in Appendix B, Figure B.3.

CHAPTER 2. APPRAISED MARKET RENTAL VALUE OF GRAZING ON PUBLIC RANGELANDS

PURPOSE OF GRAZING MARKET RENTAL APPRAISAL

In the PRIA, Congress legislated a grazing fee formula and established fair market value of grazing lands by legislative definition. In House Report No. 95-1122, Congress charged the Secretaries to "refine the data on the value of the public rangelands as compared to privately owned rangelands." In response to the congressional charge, the FS and the BLM conducted a grazing rental market value appraisal of public rangelands. The two primary objectives of the appraisal were: (1) to establish a market value, which is the amount a livestock operator would pay for grazing use on the public lands if these lands were offered on the open market, and (2) to provide the information needed to compare that value with the public land grazing fees now derived from the current fee formula established by the PRIA.

DEFINITION OF FAIR MARKET RENTAL VALUE USED IN THE APPRAISAL

The American Institute of Real Estate Appraisers states that "an appraisal is an unbiased estimate of the nature, quality, value, or utility of an interest in, or aspect of, identified real estate, . . . is based on selective research into appropriate market areas; assemblage of pertinent data; the application of appropriate analytical techniques; and the knowledge, experience, and professional judgment necessary to develop a conclusion that is appropriate to the problem." Fair market rental value is defined as "The amount in cash, or in terms reasonably equivalent to cash, for which in all probability the grazing use would be rented or leased by a knowledgeable owner willing but not obligated to rent or lease to a knowledgeable renter or lessee who desired but is not obligated to lease." It was also defined as "The amount that livestock owners would probably pay for the grazing use if it were offered for rent or lease in the open market" (Brownell and Tittman, 1984a).

FUNCTION OF THE APPRAISAL

The grazing market rental appraisal was undertaken to: (1) provide market data from which to compare values obtained from the USDA-Statistical Reporting Service Annual June Enumerative Survey (JES) of Private Grazing Land Lease Rates (the Forage Value Index); (2) compare the closeness of PRIA fee rates, which include factors of cost of production and ability to pay, with comparable private grazing land lease rates obtained in a free, open market, and (3) place a market value on the occupancy, use, and consumption of public rangeland forage where the leasing of grazing privileges through permit or lease is a form of purchasing resources.

A market value appraisal is an accepted and theoretically correct method for determining the value of land resources used in the production of livestock products. The market approach uses the "comparative lease method" to estimate current market values of resources and land services. The Bureau of Indian Affairs (Department of the Interior) has used this methodology extensively. The Department of Defense (Army and Navy) also used this methodology to determine rental value for other Federal grazing lands leased by the Army Corps of Engineers or the Navy. The method used in the FS/BLM appraisal was mass data appraisal, which provided a reservoir of market and related economic data for a specified area.

SCOPE OF THE APPRAISAL

The field work portion of the appraisal took 17 months to complete (July 1982 to November 1983). The field appraisers interviewed approximately 100,000 persons to identify who leased grazing lands. Those interviewed included bankers, appraisers, farm management specialists, loan officers, grazing permittees, nonpermittee livestock producers, etc. The appraisers developed lists of persons, from those interviewed, who leased grazing lands which they believed represented 80 to 90 percent of the transactions within the area surveyed. These interviews resulted in a transaction data base that contained 11,675 records. The 11,675 records contained 7,246 usable observations of different prices reflecting the results of open market negotiations between lessors and lessees for grazing use of lands by cattle, horses, yearling cattle, and sheep.

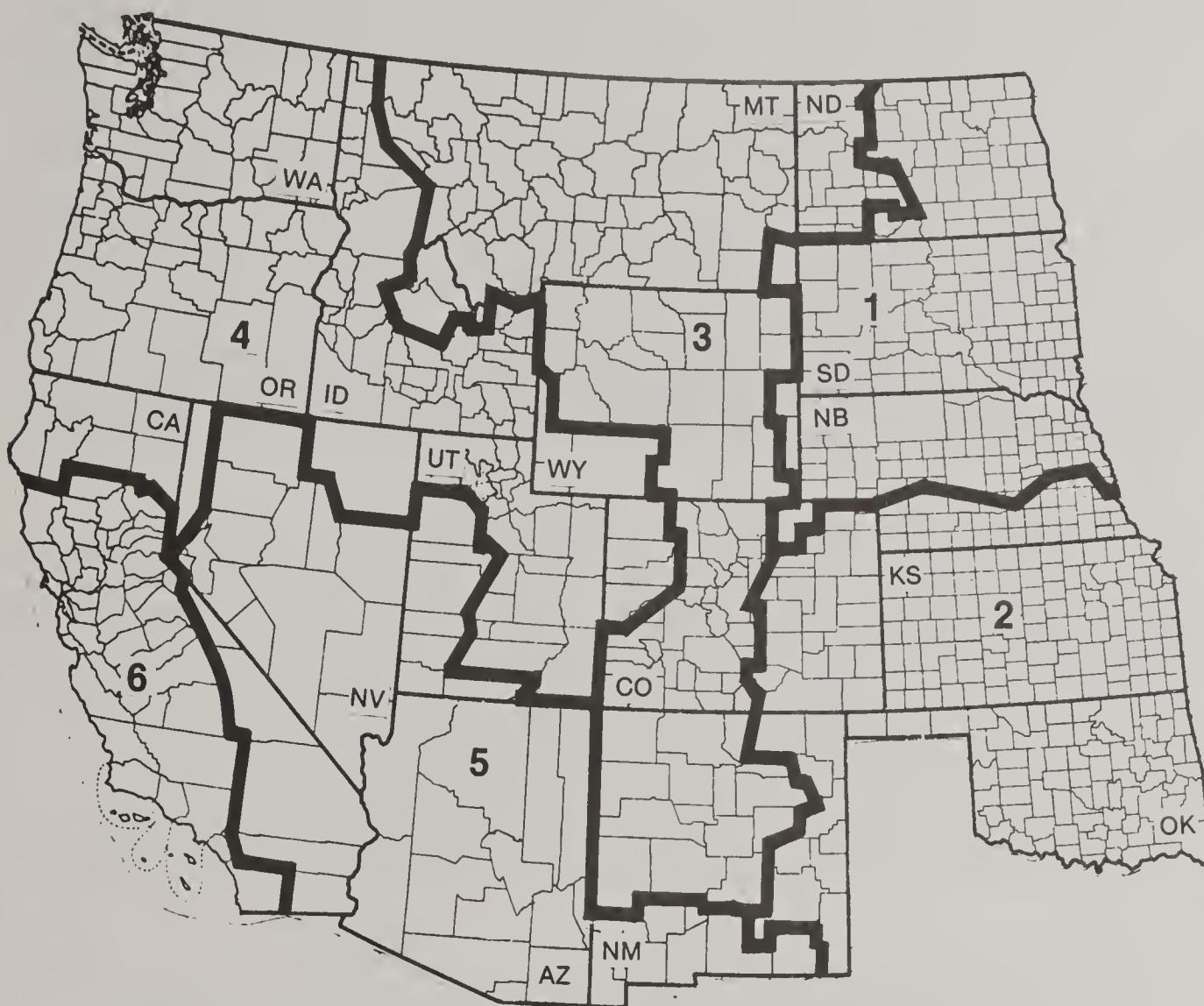
The appraisal covered 16 Western States, plus two counties in Texas, which were divided into six pricing areas (see Figure 2.1). Criteria for selecting the boundaries of the pricing areas included the following, in order of priority: (1) mean county prices for mature cattle and horses; (2) consideration of the natural vegetation, which reflects the influence of soils, climate, and land features; (3) physical or geographic features; and, (4) political or administrative boundaries. Data on 99 physical characteristics and lease terms and conditions that could affect value were collected for each lease. The 99 items were reduced or combined to form 81 potential value determining factors. The most important factors are shown in Appendix B, Figure B.8.

APPRAISAL PROCESS AND CONCLUSIONS

The appraisers used appraisal techniques that acknowledged a wide range of conditions on individual allotments on the public rangelands, and recognized the impossibility of accounting for the differences between individual allotments or tracts. A universe of market transactions involving private leased rangelands, subleased public rangeland administered by the BLM and FS, and other Federal rangeland properties as of a given date were analyzed in a uniform manner. The appraisal used standard methodology and employed a common reference for data. This process is referred to as mass appraising and allows for statistical analysis of data for determining factors that influence value between the subject properties and comparable transactions. This process may use statistical data when (1) it shows high levels of correlation between factors and price, and (2) the sample size is sufficient to be reliable. The appraisers applied such statistical analysis and found some correlations of factors with value, but did not find any that were statistically significant. (See the Statistical Appendix to the Appraisal, Volume 2, Exhibit 13-10.) Therefore, they did not base the adjustments in the appraisal on the results of the statistical analysis of the factors and price data.

The value estimates presented do not represent the "site specific" fair market grazing rental value of any individual allotment. Rather, they are intended to represent a reasonable estimate of the mean average rental value of grazing on the public rangelands. Appraised market value reflects the highest price that a property will bring if exposed to sale or rent in the open market. There must be a willing seller (or lessor) and a willing buyer (or lessee), both knowledgeable of all uses of the property and neither being under abnormal pressure. The quantification of appraised value is based on this concept of market value. In the grazing rental appraisal, it is determined as an average value that would be realized from rental of all allotments available for grazing.

Figure 2.1: Westwide Pricing Areas: Mature Cattle, Horses, and Yearling Cattle--Pricing Areas 1 through 6; Sheep--Entire Westwide Area



BLM AUM's and Forest Service AM's by Pricing Area*

Pricing Area	BLM AUM's	FS AM's	Total	Percent of Total
1	196,558	194,424	390,982	2%
2	351,538	11,261	362,799	2%
3	4,352,997	2,782,956	7,135,953	33%
4	4,112,507	2,226,620	6,339,127	29%
5	4,351,845	2,673,227	7,025,072	33%
6	116,813	214,620	331,433	2%
Total	13,482,258	8,103,108	21,585,366	100%

* Numbers of AUM's and AM's reported in the appraisal, 1982 data BLM AUM's correspond to Forest AM's.

In arriving at an estimate of the fair market rental value for grazing on the public rangelands within each pricing area, the use and conditions on the private leased lands were compared to the use and conditions on the public rangelands. Based on a pure "qualitative analysis" of different factors, it was the appraisers' judgment that any advantage the lessee of private lands might have over the public rangelands permittee/lessee, as a result of the general lack of stipulations or restrictions on the private lease, was at least partially offset by the guaranteed tenure, the rights of appeal, and the option of nonuse for 3 years at no cost that were afforded the public rangeland permittees/lessees.

The analyses showed there were different prices being paid for different kinds and types of animals. They also showed there were differences in prices being paid in different geographic areas that could be attributed to broad differences in various factors that included location, seasons of use, and carrying capacity or quality of range. For example, prices being paid for typical spring-summer-fall grazing on lands stocked at 1-10 acres per AUM in South Dakota were 2 to 3 times the prices paid for year-round grazing on lands in the southwestern desert areas of New Mexico, Arizona, and Nevada on lands stocked at 20 to 40 acres per AUM.

The Agencies' appraisers, in consultation with the contracted private review appraisers, concluded that the most appropriate and valid measure of the rental value of public land grazing was the average price of the negotiated leases. The value estimates were based on indications provided by the 7,246 observations of the negotiated leases. Because of the wide range of prices shown by these observations and the skewness of rental prices to the high side, they further concluded the need to remove the extremes of highs and lows in prices by excluding the top and bottom 15 percent of the reported prices. This left 70 percent of the data as the basis for estimating the fair market rental. Eliminating the extreme values at each end of the range in this manner reduced the skewness and resulted in lowering the appraised market value an average of 5 percent.

The appraisers also compared the westwide average prices paid on private leased lands to the westwide average prices paid for over 600 competitive and/or negotiated leases on approximately 9 million acres of Federal lands. The leases of Federal lands included competitive leases of military reservations, wildlife refuges, reclamation lands, and subleases of Federal grazing permits, including intermingled public and private rangelands, where all or part of the public land is administered by BLM or FS. These transactions did not involve the landowner's care or management of the livestock. This showed an average price of \$6.53 per month for the Federal lands compared to \$6.87 for Nonfederal lands, indicating a -5 percent lower value for grazing on Federal lands than for the Nonfederal lands. The -5 percent difference was attributed to a number of factors, including the general conditions of the permits or leases, differences in costs of operation and desirability of use, etc.

The appraisers recommended a further adjustment because of the different payment schedules that were authorized for use on public rangeland permits/leases. The appraisal data showed that private market transactions were discounted approximately 10 percent for advance payment. Generally, both Agencies required partial or full payment in advance. The additional -10 percent adjustment together with that due to the indicated 5 percent lower market value of public grazing land leases and subleases resulted in a total -15 percent adjustment from the private grazing rates. No adjustments were made for factors such as size

(in acres, AUM's, number of head), quality of range (carrying capacity or stocking rate), improvements, availability and distribution of water, etc., for the following reasons: (1) the transactions showed no difference in prices paid because of differences in these factors, and/or (2) the public rangeland allotments within each of the pricing areas exhibited broad ranges in physical characteristics and the private leased lands exhibited the same general, broad ranges in these characteristics or factors.

The mass appraisal technique assessed comparability for similar leased public and private rangelands but did not identify differences between specific leased or rented areas. The mass appraisal was, therefore, an indicator of the mean average prices paid in the market for grazing of rangelands, and was a reliable indicator of the average market value of public leased rangelands.

Figure 2.2. presents for each of the six pricing areas estimates of the average private land lease rate and the estimated average appraised market value of grazing on the public rangelands, with recommended adjustments for advance payment for mature cattle and horses, yearling cattle, and the westwide price for sheep, as of October 1, 1983.

Figure 2.2: Appraisal Value Conclusions (\$ Per Head or Pair Month), 1983

Price Area	Private Land Lease Rate	Appraised Market Value of Grazing on Public Rangelands	Adjusted Value for Advance Payment
MATURE CATTLE & HORSES (over 18 months of age)			
1	\$10.00	\$ 9.50	\$ 8.55
2	\$ 7.50	\$ 7.10	\$ 6.39
3	\$ 8.00	\$ 7.60	\$ 6.84
4	\$ 6.25	\$ 5.90	\$ 5.31
5	\$ 5.50	\$ 5.20	\$ 4.68
6	\$ 6.75	\$ 6.40	\$ 5.76
YEARLING CATTLE (Under 18 months of age)			
1	\$ 7.50	\$ 7.10	\$ 6.39
2	\$ 6.75	\$ 6.40	\$ 5.76
3	\$ 6.25	\$ 5.90	\$ 5.31
4	\$ 5.70	\$ 5.40	\$ 4.86
5	\$ 5.50	\$ 5.20	\$ 4.68
6	\$ 4.75	\$ 4.50	\$ 4.05
SHEEP			
Westwide	\$ 1.10	\$ 1.05	\$.95

Part 2 - EVALUATION OF ALTERNATIVE GRAZING FEE SYSTEMS

CHAPTER 3. CURRENT (PRIA) FEE SYSTEM

BASIS OF FORMULA

The PRIA formula consists of a base value of \$1.23 per AUM that is updated annually through a series of indexes that measure changes in the private grazing land lease rates, the price of beef cattle, and the costs of livestock production. The base period for the indexes is 1964 to 1968. The PRIA formula is:

$$\text{Calculated Fee (CF)} = \$1.23 \times \frac{\text{FVI} + \text{BCPI-PPI}}{100}$$

Where:

CF = The Calculated Fee to be charged, which Congress defined as fair market value, which is the estimated economic value of livestock grazing to the user, and where annual increases or decreases in the fee are limited to a plus or minus 25 percent of the previous year's fee.

\$1.23 = The base value established in 1966 through the Western Livestock Grazing Survey (WLGS).

FVI = The Forage Value Index, an index of annually surveyed private grazing land lease rates, 1964-1968 = 100.

BCPI = The Beef Cattle Price Index, an index of USDA annually reported prices of beef cattle over 500 pounds, 1964-1968 = 100.

PPI = The PRIA Prices Paid Index, indexed prices that producers of livestock pay for selected production items, 1964-1968 = 100.

The performance of the PRIA grazing fee formula and its individual components are evaluated in this Chapter. A comparison of PRIA fees with the 1983 appraised market value, the former 1969 fee system, and possible improvements to formula components are also discussed.

Figure 3.1 shows the formula indexes included in PRIA for the years 1964 to 1984 and the calculated PRIA value for public grazing fees. The PRIA formula, however, has only been used to calculate fees since 1979. The data for 1964 to 1979 are included to provide a long-term perspective on the response of the PRIA formula to its indexes.

Figure 3.1: Data Used to Compute Grazing Fees with PRIA Formula and PRIA Values

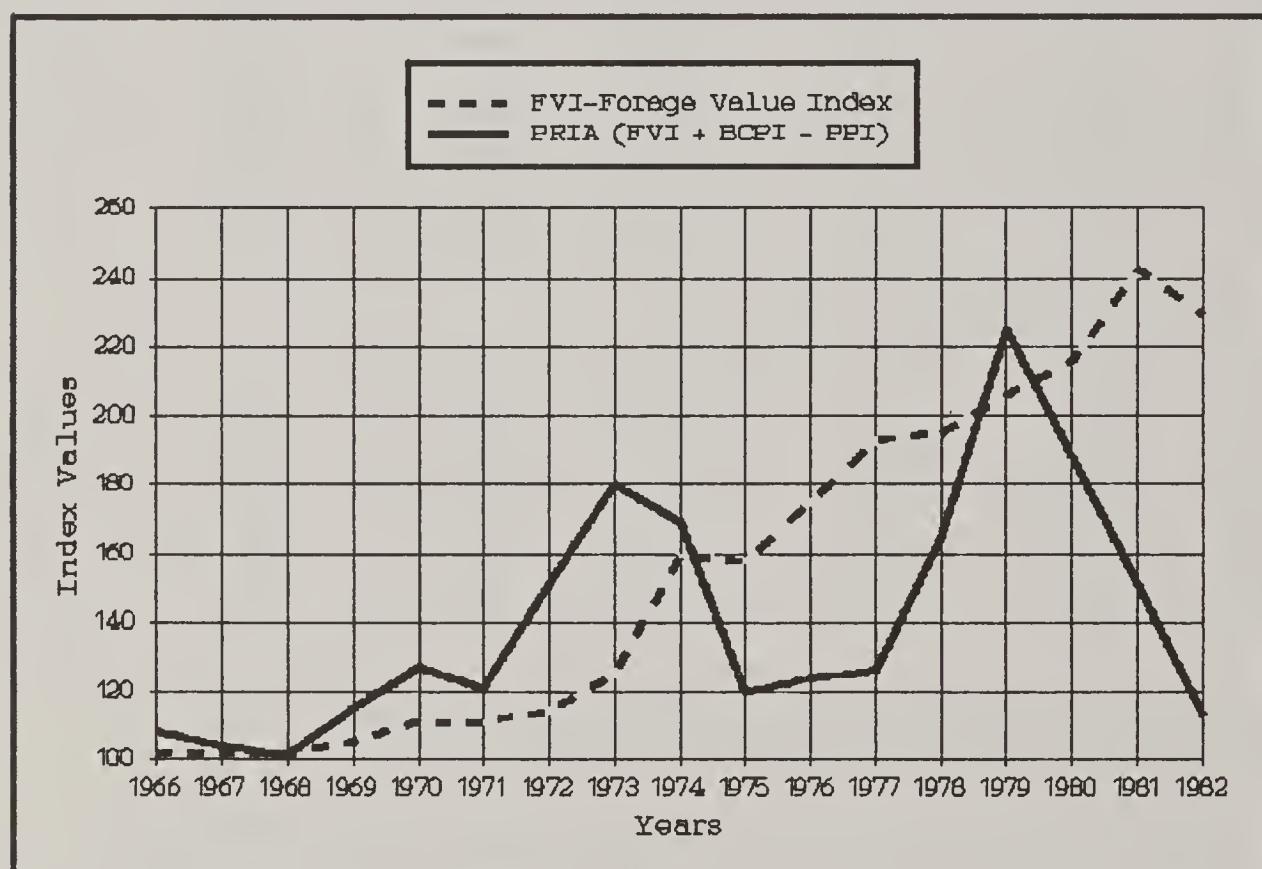
Data Year	Fee Year	Private Grazing Land Lease Rate (PGLLR)	Forage Value Index (FVI)1/	Beef Cattle Price	Beef Cattle Price Index (BCPI)2/	Prices Paid Index (PPI)3/	Unconstrained PRIA Fee Rates4/
<u>Indexes for Base Years 1964 - 1968 = 100.</u>							
1964-68	--	\$3.65	100	\$22.04	100	100	1.23
<u>Indexes for Years 1969 - 1978:</u>							
1969	1970	3.82	105	27.00	123	113	1.41
1970	1971	4.05	111	29.50	134	118	1.56
1971	1972	4.06	111	29.50	134	124	1.49
1972	1973	4.17	114	36.80	167	130	1.86
1973	1974	4.57	125	43.00	195	140	2.21
1974	1975	5.82	159	39.20	178	168	2.08
1975	1976	5.75	158	35.20	160	198	1.48
1976	1977	6.37	175	36.10	164	215	1.52
1977	1978	7.06	193	36.00	163	230	1.55
1978	1979	7.11	195	47.60	216	246	2.03
<u>Indexes During PRIA Fee Formula, 1979 - 1985:</u>							
1979	1980	7.53	206	64.90	294	275	2.77
1980	1981	7.88	216	64.20	291	319	2.31
1981	1982	8.83	242	59.10	268	359	1.86
1982	1983	8.36	229	57.70	262	378	1.39
1983	1984	8.85	242	56.40	256	387	1.37
1984	1985	8.86	243	57.79	262	395	1.35
1985	1986	8.40	230	53.65	243	397	5/

- 1/ The annual PGLLR divided by the 1964-1968 base PGLLR of \$3.65 and multiplied by 100 to convert to an index number.
- 2/ The annual beef cattle price divided by the 1964-1968 base beef cattle price of \$22.04 and multiplied by 100 to convert to an index number.
- 3/ Index of prices paid by farmers and ranchers for inputs needed to produce beef from November through October of the data year and weighted to reflect beef production in the 11 Western States as reported by the Statistical Reporting Service.
- 4/ PRIA calculated rates or economic value without applying plus or minus 25 percent limit on year-to-year change. For actual PRIA fee rates for the years 1979 - 1985 see Appendix Figure B.4.
- 5/ PRIA fee formula expired December 31, 1985; indexed values on the 1964-1968 base period are shown. The unconstrained PRIA calculated fee rate for 1986 would have been \$0.93 per Animal Unit Month.

EVALUATION OF THE FORMULA

Role and Effects of the Combined Index: The intent of the PRIA formula has been to adjust the \$1.23 base value over time using the FVI to account for market changes and the difference between the BCPI and the cost of livestock production as measured by the PRIA formula PPI to account for changes in the permittees ability to pay. The BCPI minus the PPI is the combined index and reflects short-term changes in the permittees' ability to pay, in addition to a level of ability to pay reflected in the FVI. A simulated comparison of the results of PRIA with the FVI is shown in Figure 3.2 for the years 1966 to 1978, and an actual comparison for 1979 through 1982 is shown. Tying grazing fees to ability to pay has reduced the return to the Government from the public rangelands since 1979. This can be seen in the spread that has occurred between private grazing charges illustrated by FVI and the PRIA grazing fee index.

Figure 3.2: A Comparison of the PRIA Formula and the FVI

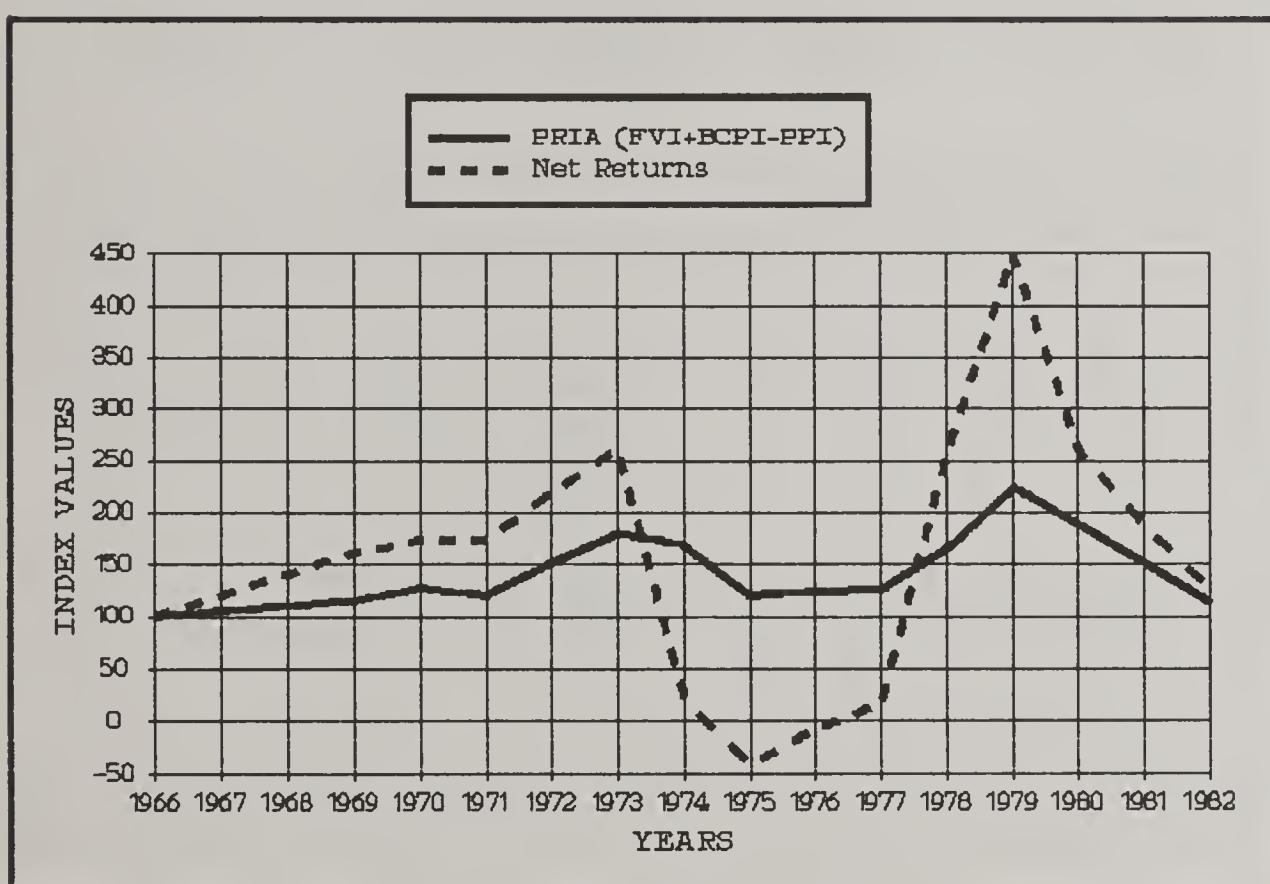


Since 1979, the inclusion of the combined index has resulted in a sharp downward trend in the PRIA values. Figure 3.2 illustrates the difference between the index of private lease rates (FVI) and an index of PRIA. The PRIA also fell below FVI in the 1975 to 1978 period. From 1969 to 1974, the inclusion of the combined index would have resulted in greater revenues for the Government than would have occurred if only the FVI was considered. In 1979, the PRIA value was greater than use of the FVI alone would have justified. Thus, the application of PRIA from 1964 to 1974 and in 1979 would have reduced returns to permittees in that favorable market price and profit

period due to the influence of the combined index. In those years when the PRIA was below the FVI, the public land permittees would have gained a competitive advantage relative to other livestock producers who rented rangelands at market rates as reflected by the FVI. In years when the PRIA was higher than the FVI, permittees would have been at a relative competitive disadvantage to producers without FS or BLM grazing permits.

Figure 3.3 shows the PRIA compared to a composite of beef cattle prices minus costs of production computed as an index for the 1966 to 1982 period (1966 base year = 100). The net returns index was computed by the Economic Research Service (ERS) using livestock prices and costs computed by indexing current costs using the PPI in the PRIA formula. The PRIA formula follows the same general trends as the net returns and captures some of the annual variation and trend in the permittee ranchers' ability to pay.

Figure 3.3: Comparison of PRIA and Net Returns Index



Source: Brokken and McCarl, 1984.

\$1.23 Base Value: The 1966 WLGS, from which the \$1.23 base value was derived was based on a 1964 economic study of grazing fees contracted by the FS and the BLM to Utah State University (USU). The objective was to develop a model that measured the annual economic value of grazing land use and occupancy to permittees of public rangelands. The economic model is described as follows:

"An economic model developed at USU is based on the assumption that the economic principles of supply and demand operate in a competitive range forage price market just as they do for products in other markets. The economic rationale of the study was the alternative cost concept. The essence of this principle is the value of public range forage used for grazing is equal to the rental value of private pastures leased for grazing after adjusting for differences in the costs of services provided on the private lands but not on public rangelands.

In other words, if a competitive market exists for grazing forage, total user costs for comparable public land and private ranges will be equal. If use cost differentials exist, ranchers in a competitive market will attempt to gain control of the low-cost forage source. The nonfee costs plus the private lease rate represent the total cost of operation on leased private land. When the nonfee cost items for public land users are subtracted from the total cost to the rancher leasing comparable private grazing land, the difference measures the dollar value a rancher should be willing to pay in a competitive market for the use of the public land." (Review of Federal Land Administration for Livestock Grazing, 1967)

In 1966, the USDA Statistical Reporting Service (SRS) interviewed 10,000 individuals in a one-time survey to obtain information on the fee and nonfee costs associated with the leasing of public and private grazing lands. The 1966 base value for public lands of \$1.23 per AUM, as shown in Figure 3.4, was derived from subtracting the total of the fee and nonfee costs (\$4.54) on private leases ($\$4.54 - \$3.28 = \$1.26$). The numbers in parentheses in Figure 3.4, \$1.26 and \$1.13, are the values that equalize the costs of grazing the private leased lands and the public lands, or what the model represented as the fair market value of grazing public rangelands for cattle and sheep respectively. These values were weighted by the number of cattle and sheep AUM's to derive the \$1.23 base value. Based on the annual survey by SRS from 1964 to 1968, the five-year average private grazing land lease rate was \$3.65 per AUM. This average rate was used to form the FVI that was used as the annual adjustment mechanism in the 1969 Fee System and the PRIA Fee System.

Another way of understanding the derivation of the \$1.23 base value is by subtracting nonfee differential costs of \$.53 per AUM for cattle and an additional \$.02 per AUM for sheep, or a total of \$.55 in costs from \$1.78, the weighted average private grazing land lease rate found in the 1966 WLGS. The results of the 1966 WLGS were applied by the FS and the BLM in the 1969 grazing fee formula (Study of Fees for Grazing on Federal Lands, 1977). Nonfee costs for grazing private leased and public rangelands determined by the 1966 WLGS are shown in Appendix B, Figure B.9.

The 1983 appraisal of rental value, discussed in Chapter 2, used a market data approach instead of a cost approach (used in the 1966 WLGS) to establish a fair market base value. Since the \$1.23 base value is nearly 20 years old, the current PRIA formula could have been updated through the use of the 1983 market value appraisal results presented in Chapter 2. The FS and the BLM in

1981, as part of the current grazing fee study, chose not to update the 1966 WLGS because: (1) private grazing land lease rates, obtained through a market appraisal and analysis, were needed for comparison with private grazing land lease rates obtained annually through the annual JES (USDA-SRS annual survey of farmers and ranchers (see Figure 3.7)); (2) the 1966 base value, which was derived from a differential cost base value, needed updating; and (3) the costs for repeating the 1966 WLGS in 1983 would have been in excess of \$4 million, as opposed to the \$2.8 million cost of the appraisal.

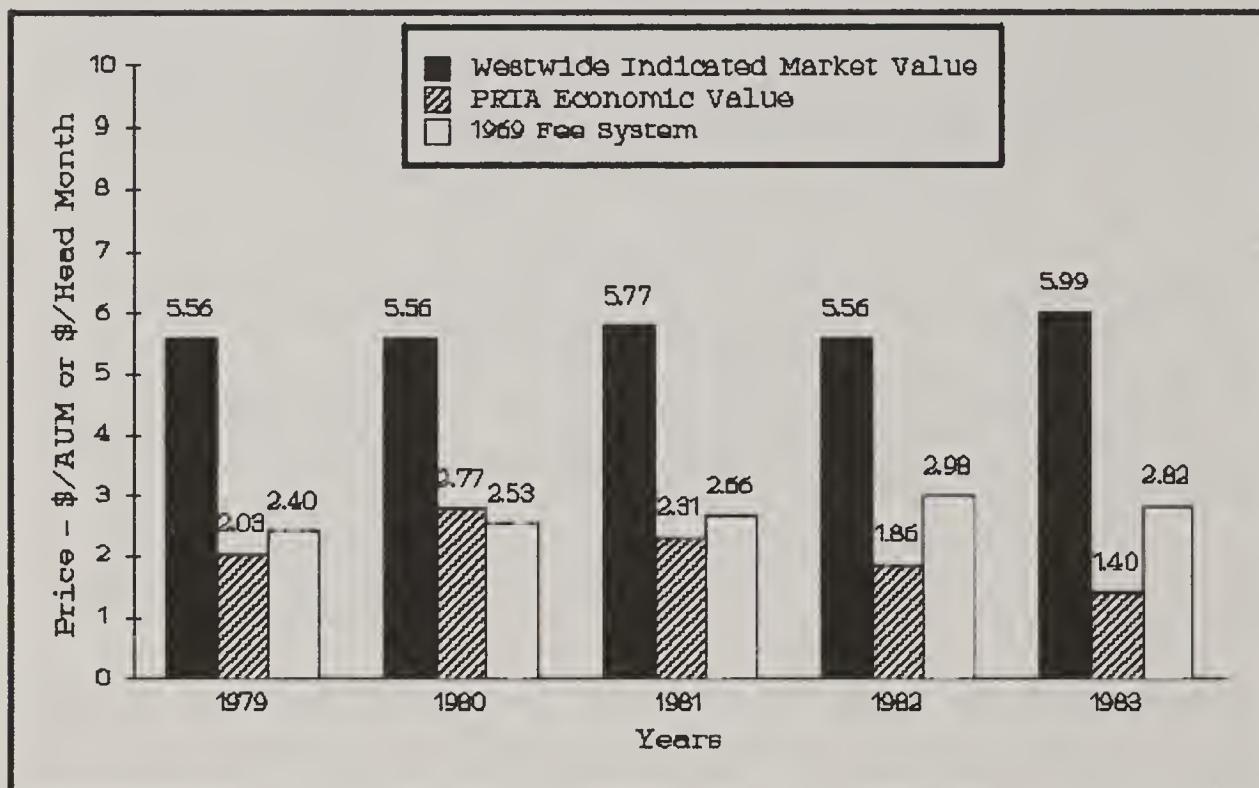
Figure 3.4: Summary Results of the 1966 Western Livestock Grazing Survey

	Cattle		Sheep	
	Public	Private	Public	Private
Total Nonfee Costs	\$3.28	\$2.75	\$4.53	\$3.89
Lease rate	(\$1.26)	\$1.79	(\$1.13)	\$1.77
Total Costs	\$4.54	\$4.54	\$5.66	\$5.66
Derived FS/BLM Lease Rate	(\$1.26)		(\$1.13)	
Difference for Private Lease	\$0.53		\$0.64	
Weighted Private Lease Rate (Cattle and Sheep)			\$1.78	
Cattle and Sheep nonfee cost weighted difference: (Cattle 80%, sheep 20%)			<u>-\$0.55</u>	
Weighted nonfee costs difference			\$1.23	

Comparison of PRIA Fees with Westwide Indicated Market Value and the 1969 Fee System, 1979-1983: Measures of the PRIA formula's performance for 1979 to 1983 were derived from comparing the indicated market value for the public lands, as determined by the grazing rental appraisal, with fee rates that would have been derived from the former 1969 fee system. The FS and BLM appraisers, through a separate market analysis, observed that 1983 private grazing land lease rates were \$7.00 per head month (\$/AUM). After discounting ten percent for advance payment and an additional five percent for comparability adjustment, the 1983 indicated market value of grazing on public rangelands was \$5.99 per head month (Brownell and Tittman, 1984b.)

The 1969 fee system annually adjusted the 1964 to 1968 base value of \$1.23 by an index of the annual change in private grazing land lease rates. Figure 3.5 shows PRIA's performance in relationship to the indicated westwide market value and fee rates determined by the 1969 grazing fee system. (See Brownell and Tittman, 1984b.) The indicated westwide market value was based on 16 Western States, while the PRIA and the 1969 grazing fee system values were based on 11 Western States. For the 5 years 1979 to 1983, the PRIA fees averaged 36.4 percent of the indicated market value, with a range from 50 percent in 1980 to 23 percent in 1983. Although the PRIA and the 1969 system produced about the same fee in 1980, by 1983 the PRIA fee was less than half the amount that the former system would have produced.

Figure 3.5: Comparison of the PRIA Fee with the Westwide Indicated Market Values and the 1969 Grazing Fee System, 1979-1983



As shown in Figure 3.6, the differences for the years 1979 to 1983 between the PRIA rates and the indicated market value range from \$3.63 per AUM to a high of \$4.59 per AUM or an average difference of \$3.80 per AUM.

Figure 3.6: Comparison of PRIA Values with the Indicated Market Values and the 1969 Grazing Fee System Values, 1979-1985

Fee Year	PRIA Fee Rates \$/AUM	Indicated Market Value \$/Hd Mo 1/	PRIA Minus Indicated Market Value \$/Hd Mo	1969 Fee System	PRIA Minus 1969 Values 2/
1979	1.93	5.56	-3.63	2.40	-0.47
1980	2.41	5.56	-3.63	2.53	-0.12
1981	2.31	5.77	-3.46	2.66	-0.35
1982	1.86	5.56	-3.70	2.98	-1.12
1983	1.40	5.99	-4.59	2.82	-1.42
1984	1.37	3/	3/	2.98	-1.61
1985	1.35	3/	3/	2.99	-1.64

1/ Indicated market value after adjustment for comparability and advance payment. (Brownell and Tittman, 1983b.)

2/ Fee rates which would have been charged under the 1969 fee system.

3/ Not available, would require forward indexing of the 1983 indicated values.

EVALUATION AND IMPROVEMENT OF FORMULA INDEXES

Forage Value Index (FVI): The FVI is used in the PRIA grazing fee formula to update the fee determination for annual changes in the market value of public grazing lands. The FVI index is based on the SRS annual June Enumerative Survey (JES). As part of the JES, cattle operators (permittees and nonpermittees) in statistically drawn areas are asked to report what private grazing lands are renting for in their area on a per AUM, per pair, and per head basis. The FVI is a weighted average estimate of rental value per AUM for the 11 Western States. Each year's private lease rate is divided by the base period's (1964 to 1968) private grazing land lease rate of \$3.65 and multiplied by 100 to convert it to the annual index number or FVI.

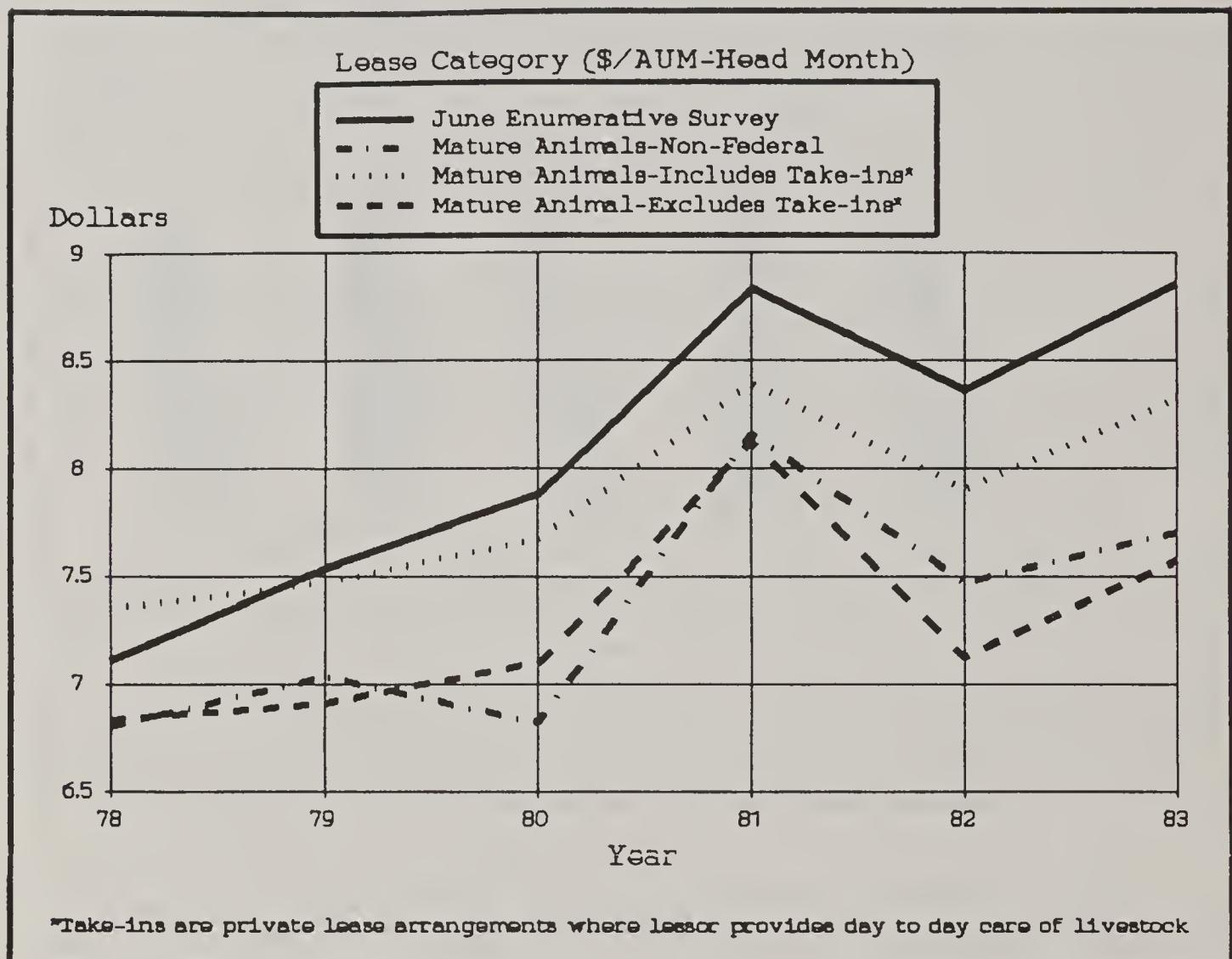
The FVI's use have caused concern by the livestock industry and the land management agencies about: (1) the lack of direct comparability between the quality of the land and the amount of services provided on the public and private grazing leases, and (2) use of a reporter type question and rancher response rather than actual price data, resulting in a lack of data for some States in some years (Nelson and Garratt, 1984). These two issues are discussed in order.

Issue 1. The accuracy of the JES was measured by comparing its results to the appraisal's results. This comparison showed that while the JES might not have been the best measure of actual prices or price trends in any individual State, it was a reliable short-term indicator of the westwide trends for private rangeland rental for mature animals. Prices paid for the private rental arrangements appeared to reflect market response to rancher demand for forage and the available supply. Figure 3.7 illustrates the westwide correlation in the movement between the JES's estimated prices and the actual prices shown in the appraisal. A comparison of the JES and the appraisal also indicated that the JES's estimates on a westwide basis were fairly close to the prices being paid, but were consistently higher.

Issue 2. The survey used in estimating the FVI asks respondents to "report" what the average private grazing lease rate was in their area. Use of a reporter question has been criticized because it does not ask persons to identify known values but asked persons to recall or speculate on values. The closeness of the JES to the appraisal partially validated the use of the reporter question. Since the JES produces constantly higher results, it also suggests the possibility of an upward bias in absolute values. The real test of the JES's use for FVI is consistency of indices for FVI based on appraisal value and JES values for 1978-1983. Further studies by the FS, the BLM, and the SRS indicated that the added benefits from improving the accuracy of the data were not worth the added costs (Nelson and Garratt, 1984).

The survey sample used in deriving the FVI was weighted by the number of farm units. Concern also has been expressed over the weighting procedures since areas with large amounts of public land tend to have few farm units and, therefore, make up a very small proportion of the FVI sample. For example, California, with many farm units but few public grazing lands, was sampled more heavily than its neighboring State of Nevada, with few farm units, but a large amount of public land. The current JES weighting system has the advantage of being more representative of all livestock operators. The percent of public land AUM's, private leases, and beef cattle marketings by State are shown in Appendix B, Figure B.10, and are summarized in Figure 3.8.

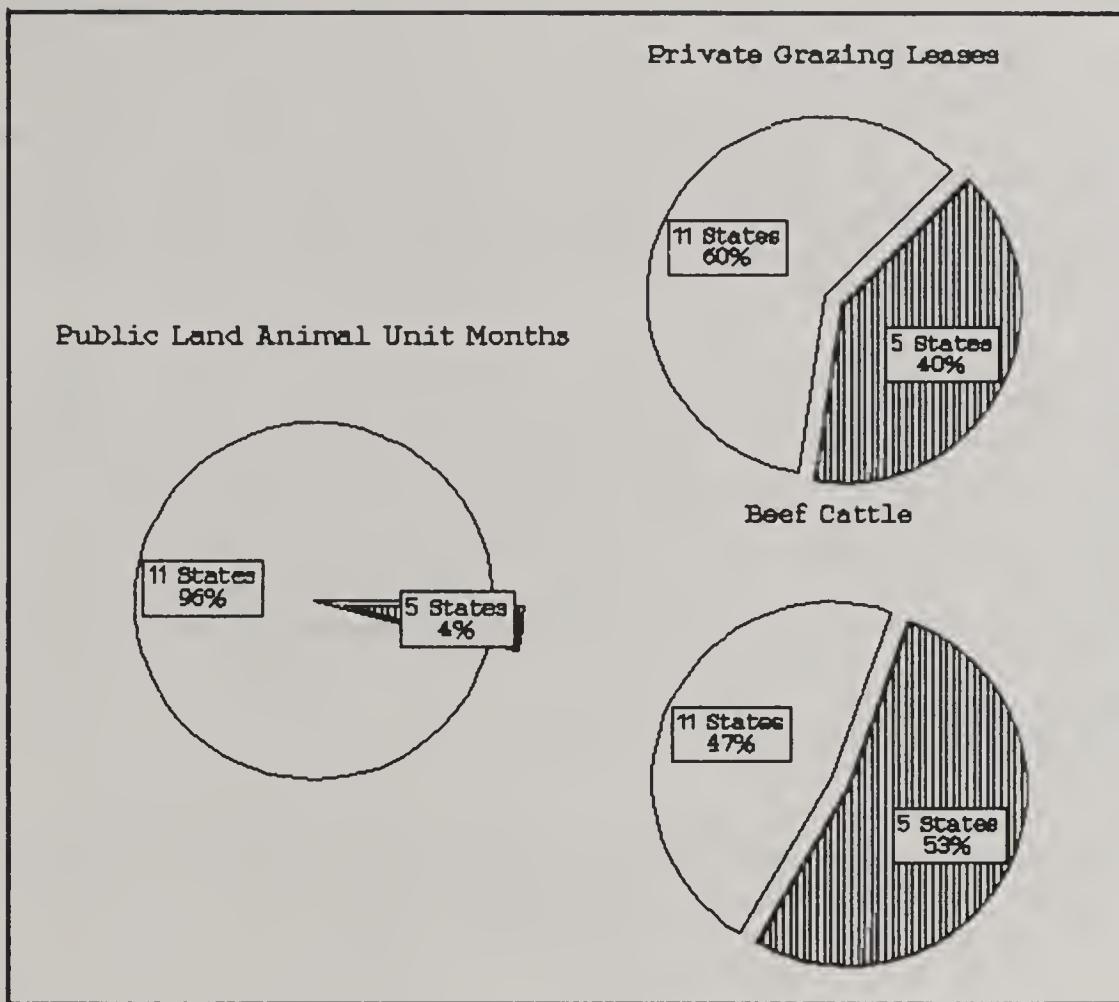
Figure 3.7: Comparison of the 1983 Appraisal Values for Private Grazing Lease Rates and the June Enumerative Survey Values, 1978-1983



Weighting JES values by AUM's would result in a private lease rate value of \$7.23 per AUM that would bring it closer to appraisal values for 1983 versus the \$8.36 per AUM rate derived from the current weighting procedures.

As stated in Chapter 1, public rangelands, excluding National Grasslands, are defined in the PRIA as those lands administered by the FS and the BLM within the 16 Western States. Analysis of the PRIA fee formula showed that the majority of public rangelands and the associated AUM's of forage production were within the 11 Western States. The analysis also disclosed, as shown in Figure 3.8, that the majority of livestock production occurred in the Great Plains States, and that these States had higher private grazing land lease rates. Weighting JES private lease rate values by public rangeland AUM's would place emphasis on the use of private lease rates for the States where the majority of the public rangelands are located.

Figure 3.8: Comparison of the Percent of AUM's, the Percent of Private Grazing Land Leases, and the Percent of Beef Cattle in the 11 Western States and the 5 Great Plains States



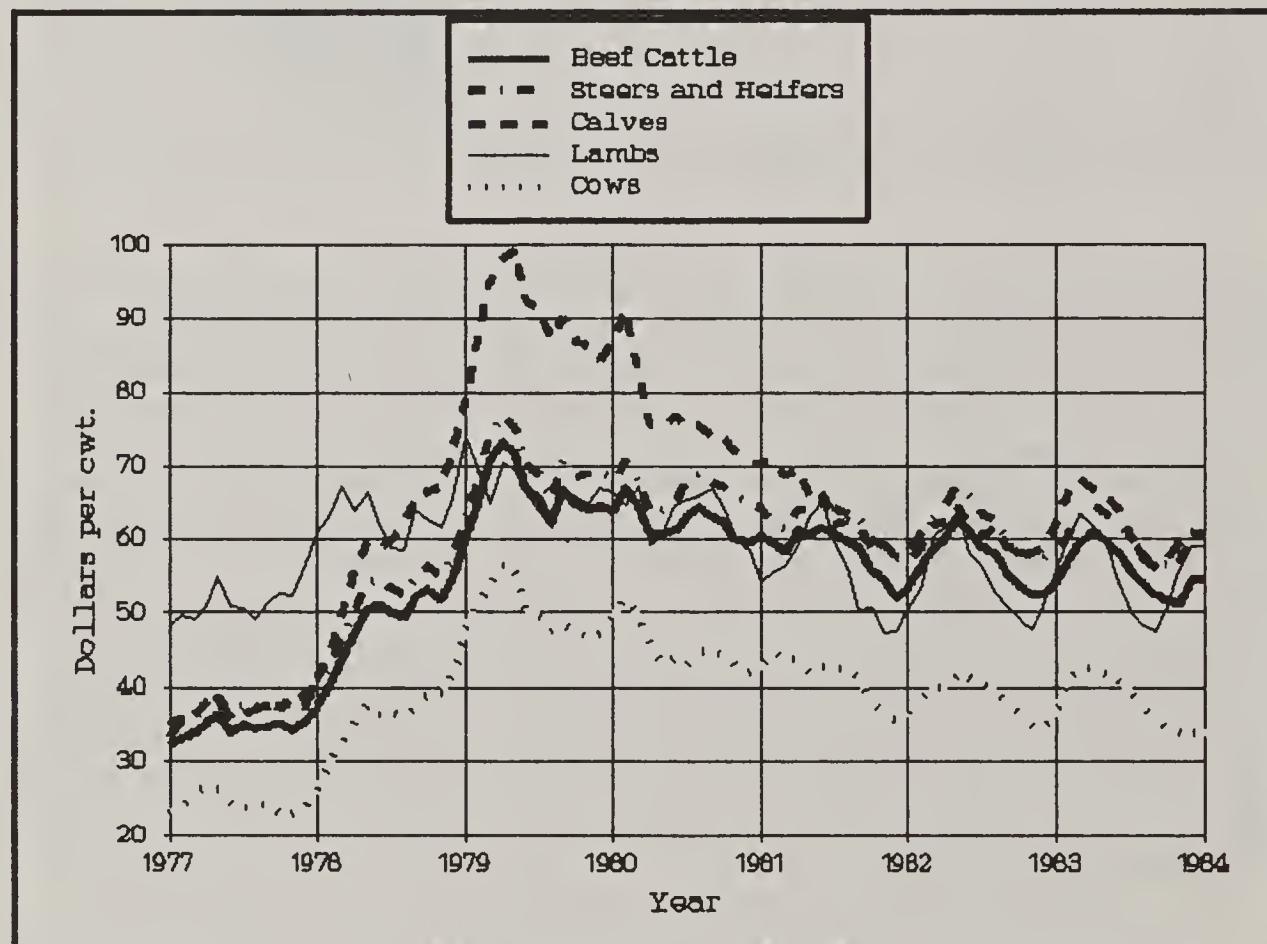
Beef Cattle Price Index: The USDA's SRS collects prices received by producers for cattle sold in 35 States. Since 1981, the livestock price survey has used a probability survey of auctions, stockyards, packers, and dealers. The sampled buyers report purchases of livestock from producers. Data provides the number of head purchased, total live-weight, and total dollars paid to the producer by the buyers before marketing costs (feed, water, trucking, commissions, inspections, etc.) are deducted. The average price by State reflects prices received for cattle marketed in each State. No information is obtained on the State of origin of the livestock marketed. The westwide price was determined by weighting each State's price by the total live-weight of livestock marketed. The SRS data used in the PRIA grazing fee formula were based on actual transactions during the 12-month, November-October period. An average annual price was computed. The annual price was converted to an index number by dividing the price by \$22.04 per hundredweight (the 1964-1968 average beef cattle price) and multiplying it by 100 (Thorp and Holden, 1984).

The prices used for the index were for beef cattle, which were defined as marketed cattle that were marketed weighing over 500 pounds, including feeder and slaughter animals. Figure 3.9 shows the prices received by producers for different types of beef cattle. The SRS beef cattle price data used in the

PRIA formula included the prices for steers, heifers, and cows over 500 pounds. Calves, defined as animals under 500 pounds, were excluded from this index. The BCPI as an index does not fully cover livestock which graze public rangelands since it does not contain data on calves (under 500 pounds) or sheep. It also includes data on fat cattle (not produced on the public lands) which reduces the index. Potential refinements to the BCPI are: (1) to modify it to include other classes of livestock (calves and sheep), (2) to modify it to exclude fat cattle, and (3) to update the base period to reflect market conditions in the 1980's. The first modification would bring the index more in line with the livestock products produced on the public lands. The current BCPI also could be refined by weighting the annual index by public land AUM's per State in each of the 16 Western States.

Adding calf prices to the existing BCPI to get a cattle price index would have little impact on the price pattern. The addition of calf prices would slightly increase the level of the cattle price index or would decrease the BCPI due to wider cyclical variation in calf price. The average value change is relatively small because calves account for only 11 percent of the marketings on a live-weight basis, and calves have the same general price trends as beef cattle over time. Figure 3.9 shows the price patterns for calves and sheep, both of which are excluded from the current SRS index, and for beef cattle (which includes steers, heifers, and cows). The conclusion was to exclude calf prices since their inclusion would not significantly change the BCPI (Thorp and Holden, 1984).

Figure 3.9: Monthly U.S. Prices of Livestock by Type, 1977-1984



The SRS recommends that data on sheep and lambs be excluded in any livestock price index for the following reasons: (1) data on sheep are not as reliable as the data used to prepare the other indexes, and (2) sheep make up such a small portion of livestock sales that the addition of the data would have only a minor effect on the index.

Modifying the index to exclude fat cattle would satisfy the concern that has been expressed about including cattle fed through feedlots in the formula price. This would require the use of a new series that started in 1983, with no historical data before that year. The series would more accurately reflect the livestock on public land, but it is unlikely to reflect different price trends from the existing series. This is not recommended.

Prices Paid Index: The PPI in the PRIA formula is an index of selected components of the National Index of Prices Paid by Farmers (Thorp and Holden, 1984). Weights used to combine the selected components are based on the 1976 cost of production budget for cow-calf operations in the western region. Figure 3.10 shows the selected components and the weights assigned to the components for the National Cost of Livestock Production Index and their regionalized application in the PPI developed for use in the PRIA formula.

The PPI used did not include: (1) the cost of living component represented by the Consumer Price Index; (2) components of farm origin (feed, feeder livestock, seed, and fertilizer); nor (3) taxes. The components of farm origin were excluded because these components generally represented either elements of feed, feed production (seed and fertilizer), or livestock purchases included in other index components. The exclusion of these factors gives greater weight to components of livestock production highly affected by market change and inflation, such as fuel costs.

The PRIA formula PPI could be refined by expanding the index to include all livestock production costs of both farm and nonfarm origin. The components and suggested weights for the expanded index, which is titled the Input Cost Index (ICI), are also shown in Figure 3.10. Production factors of nonfarm origin have increased in cost much more rapidly than production factors of farm origin. Excluding production factors of farm origin has resulted in an overstatement of the PRIA PPI permittee's production costs. Specific information in the ICI index is shown in Appendix B, Figures B.11 and B.12. The effects of including the new ICI in the PRIA fee formula are shown in Figure 3.11. The ICI, without any other adjustments to the PRIA formula, would result in a 1983 fee of \$2.67 per AUM instead of the \$1.40 per AUM fee derived from the current PPI.

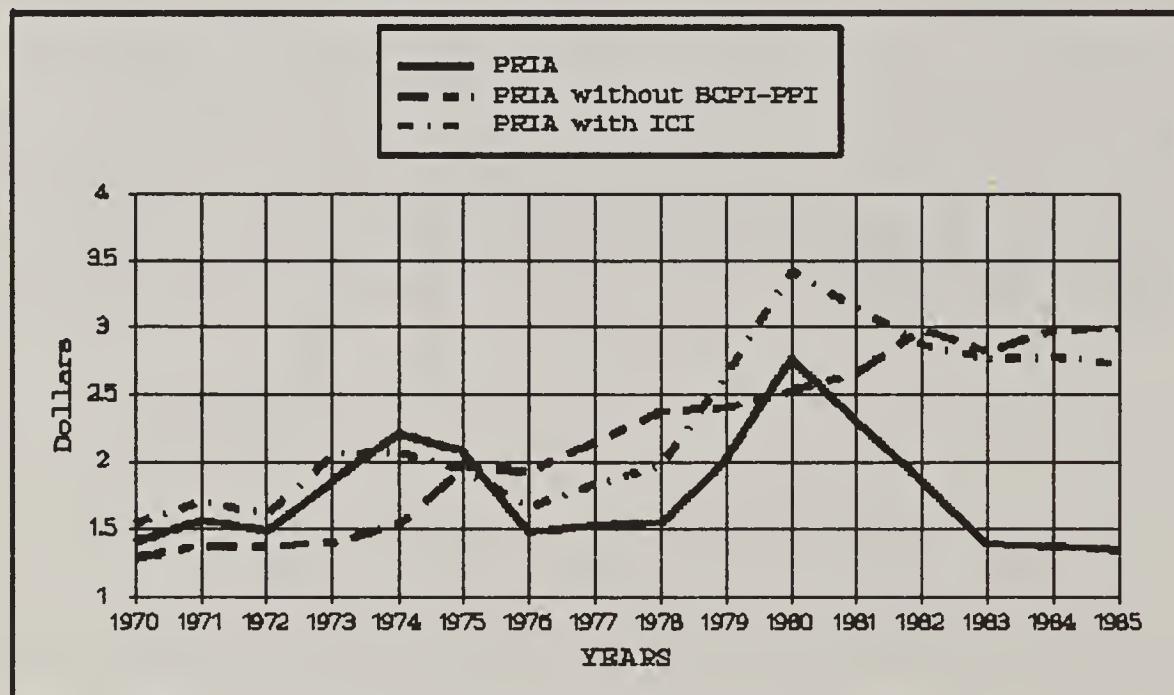
Figure 3.10: Comparison of the Factors Used in the National and the PRIA Prices Paid Indexes, and the Proposed Input Cost Index (ICI)

Index Components	National Index Of Prices Paid	PPI PRIA FORMULA 1/	ICI
Consumer Price Index	30.4		
Production Commodities	57.6	80.0	66.2
Feed	11.8		42.6
Feeder Livestock	11.7		
Seed	1.8		
Fertilizer and Ag. Chemical	5.9		
Fuels and Energy	3.5	14.5	6.7
Farm and Motor Supplies	2.2	12.0	
Autos and Trucks	2.5	4.5	
Tractors and Self-Prop. Machinery	4.5	4.5	7.2
Other Machinery	2.7	12.0	
Bldg. and Fencing Material	3.6	14.5	4.8
Farm Services	7.4	18.0	4.9
Interest 2/	4.0	6.0	19.0
Taxes and Insurance	2.8		6.3
Farm Wage Rates	5.2	14.0	8.5
Total	100.0	100.0	100.0

1/ PPI used in the PRIA formula is a regionalized index derived from a national survey of prices paid in the production of livestock.

2/ Nonreal estate interest

Figure 3.11: PRIA and the 1969 Formula Fee Values and the PRIA Computed Using the ICI



Alternative Index Weights: Currently, the PRIA formula PPI is based on a nationwide index weighted to 11 Western States to reflect production costs for cow-calf operations in the West. The FVI and BCPI are both 11-State indexes weighted by the number of private leases and the total live-weight cattle sales, respectively. The PRIA covers grazing in the 16 Western States using an 11 Western State data base. To be consistent with the language in the PRIA, grazing fees for public rangelands in the 16 Western States should be calculated based on data from the States where the fees are applied. If the indexes are based on 16 State's data rather than 11 States, problems arise because the 5 Great Plains States dominate beef production, and a few States have private grazing land lease rates that appear to be disproportionately higher than rates in adjoining States. The States' share of BLM/FS AUM's, marketings, and private leases are shown in Appendix B, Figure B.10, and are summarized in Figure 3.8. An example of the problem of expanding to 16 Western States is shown by looking at Nebraska with 28.9 percent of the market receipts and 17.4 percent of the private leases in 1983 but less than 1 percent of the comparable AUM's.

An alternative weighting method would be to use BLM and FS AUM's in each State. The AUM weights could be applied to both the BCPI and the FVI. This would make the indexes more representative of the relationship of public land grazing to market conditions. The difference that weighting makes in the relative values for the private grazing lease rate and beef cattle prices for 1983 used in the current PRIA formula, as opposed to what could be used, are shown in Figure 3.12. The 1983 grazing fee based on current weights for the 16 Western States would have been \$1.67 per AUM, as opposed to an AUM weighted fee of \$1.08 (the actual 1983 fee based on 11 Western States was \$1.40 per AUM).

Figure 3.12: Comparison of Alternative Weightings of the Private Grazing Land Lease Rate and the Beef Cattle Price Index, 1983

	Current Weighted Values	AUM Weighted Value 1/
	-----\$/AUM-----	
Private Grazing Lease Rate		
11 State	\$ 8.36	\$ 7.23
16 State	\$ 9.75	\$ 7.42
Beef Cattle Prices		
11 State	\$ 57.70	\$ 52.99
16 State	\$ 58.90	\$ 53.20
PRIA Grazing Fees		
16 State	\$ 1.67	\$ 1.08

1/ Weighted by Permitted to Graze Public Rangeland AUM's.

Alternative Base Periods: The PRIA formula currently uses a multi-year base period of 1964 to 1968 for each of the indexes, with the average of these years set to equal 100. The base period for the PRIA formula corresponds with the 1966 WLGS and the \$1.23 base value.

The USDA's SRS recommends that the base period for all indexes used in a grazing fee formula be more reflective of current farming and ranching technology. Updates should be made about every 10 years. Data used for a grazing fee computation must be consistent, the units have to be in agreement, and the base periods for each of the formula index components should be the same or as closely related as possible. State level indexes for the FVI, BCPI, and PPI are not recommended. Sample sizes at the State level are small and result in more variability. To be more current with farming and ranching technology and to accommodate the availability of a data series for use in alternative grazing fee systems, the SRS recommends 1980-1984 as the base period years (Thorp and Holden, 1984).

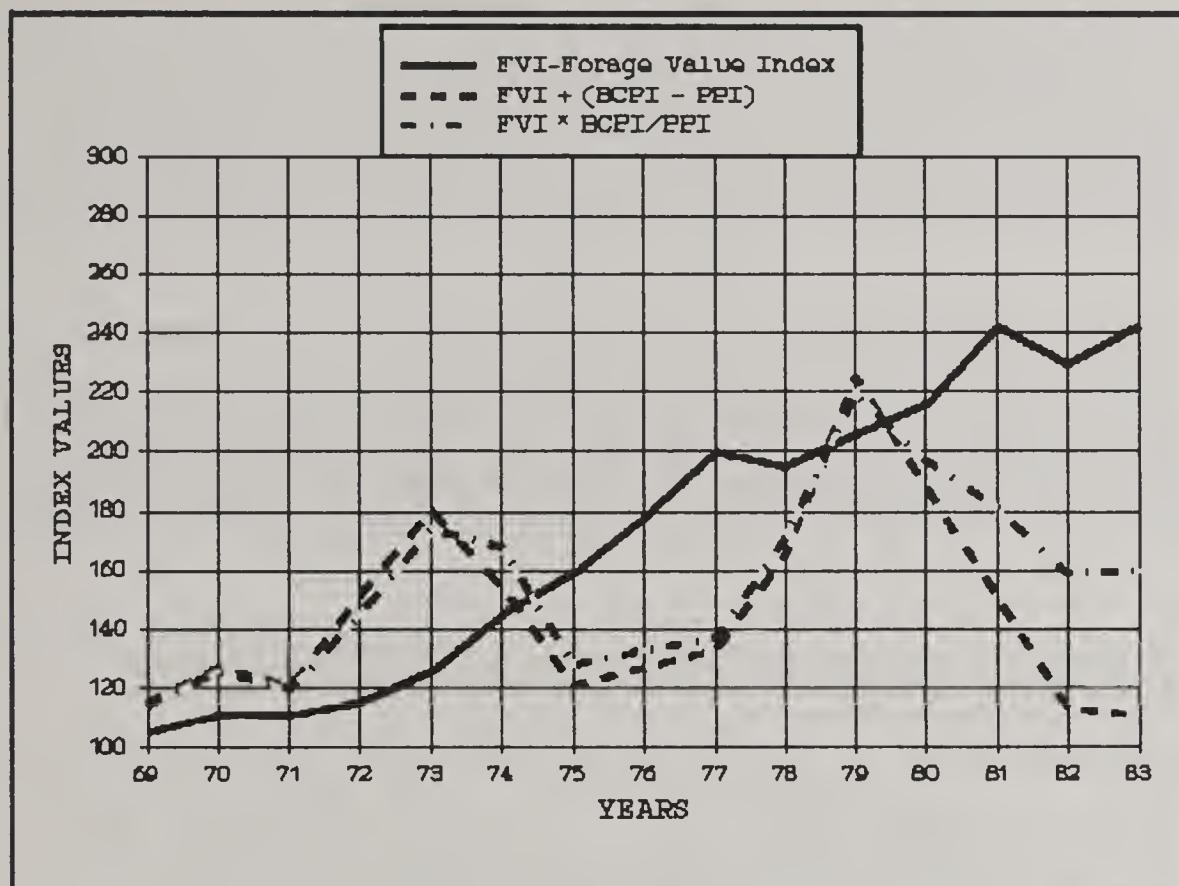
Use of Actual Data: If only actual data are used in the grazing fee formula, there will always be a time lag, unless data are projected forward. This lag in the responsiveness of the data to reflect a change in conditions can compound problems if conditions shift suddenly. As an example, an up or down change in the cattle price would affect the following year's fee rate at the very earliest, and would probably impact the rate 2 years later.

Year-to-Year Variability: This year-to-year variability can be reduced by using moving averages. The use of multi-year base weight periods for the indexes reduces the risk of using a single year that has abnormal relationships.

FORMULA CONSTRUCTION

Additional modifications to PRIA could include dividing the BCPI by the PPI or cost of production index. The effect of using a ratio (BCPI/PPI) instead of subtracting PPI from BCPI is shown in Figure 3.13. Comparison to the FVI also is shown. Using the BCPI/PPI ratio, as indicated by the graph, tends to dampen the variable effect that BCPI and PPI have on the fee. Use of the ratio rather than the absolute difference ($BCPI - PPI$) would prevent the sum of the indexes from going to zero or becoming a negative number. The ratio (BCPI/PPI) also tends to reduce the spread between the two differences (i.e., difference between the FVI and the $FVI + BCPI - PPI$, and the FVI and the $FVI \times BCPI/PPI$).

Figure 3.13: Comparison of the PRIA Formula, the PRIA Formula Using a Ratio of the Combined Index, and the FVI



PRIA With Technical Modifications: Using all of the technical modifications discussed previously would change the PRIA formula to the following:

$$\text{Calculated Fee} = \text{Base Value} \times \frac{(\text{FVI} \times (\text{BCPI}/\text{ICI}))}{100}$$

Technical modifications are: (1) compute the FVI weighted by public land AUM's per State for each of the 16 Western States instead of by the number of private grazing leases in each of the 11 Western States, (2) compute the BCPI weighted by public land AUM's (as in number 1 above) instead of by total live-weight cattle sales in the 11 Western States, (3) use an ICI that includes all production costs of farm and nonfarm origin instead of the present PPI, (4) use 1980-1984 instead of 1964-1968 for a base period, and (5) use a ratio of the BCPI/ICI instead of subtracting one from the other.

The combined effect of these technical modifications is shown in some of the alternative grazing fee formula examples in the next chapter. It should be noted that even with these technical modifications, the indexes (FVI, BCPI, and ICI) can interact to cause the calculated fee to go below the base value.

CHAPTER 4. IDENTIFICATION AND EVALUATION OF GRAZING FEE OPTIONS

The PRIA requires the Secretaries to report to Congress on ". . . their evaluation of the fee established . . . and other grazing fee options, and their recommendation to implement a grazing fee schedule for the 1986 and subsequent grazing years." The specification of grazing fee options for evaluation and the development of the evaluation criteria are described below.

Grazing Fee Systems Reviewed

In 1981, the FS and the BLM contracted for an inventory and an analysis of grazing fee systems used by other Federal agencies and State and local governments in the 16 Western States (Bartlett, McKean, and Winger, 1983). A summary of the fee systems identified by these studies is shown in Figure 4.1.

Figure 4.1: Grazing Fee Systems Reviewed in Formulating Alternatives to PRIA Fee System

FEE DETERMINATION METHOD	STATE GOVERNMENT	LOCAL GOVERNMENT	OTHER GOVERNMENT	PRIVATE	OTHER CORPORATE/PUBLIC UTILITY ETC)	COMMENTS (USERS OF THE FEE DETERMINATION METHOD, OTHER RELEVANT COMMENTS)
1. PRIA (CURRENT FS/BLM) LEGISLATED FEE SYSTEM	*		*			1. STATES: ARIZONA, CALIFORNIA AND UTAH (STATE LANDS DEPT.) FED'L: NAT'L PARK SERVICE
2. PRIVATE RATE COMPARISON	*	*	*	*	*	2. DOMINANT METHOD IN USE
3. LANDLORD-TENANT NEGOTIATION				*		3. COMMON PRIVATE MARKET APPROACH TO PRICING
4. LANDLORD SHARE OF GAIN/ANIMAL				*		4. PRIVATE MARKET APPROACH TO PRICING
5. RENTAL VALUE/ACRE grazed	*	*		*		5. SYSTEM OBSERVED IN CALIFORNIA, COLORADO, (ESPECIALLY LOCAL GOVERNMENTS)
6. BASE RENT X MKT \$/COST	*					6. FORMER OKLAHOMA, SOUTH DAKOTA, AND MONTANA FEE SYSTEM
7. BASE RENT ADJUSTED BY VARIABLE CARRYING CAPACITY	*				*	7. FEE SYSTEM DESIGNED BY UNIVERSITY OF NEVADA - RENO
8. COMPETITIVE BIDDING			*			8. DEFENSE DEPTS, (NAVY, CORPS OF ENGINEERS), BUREAU OF INDIAN AFFAIRS, BUREAU OF RECLAMATION, BLM/FS
9. COST RECOVERY					*	9. PUBLIC UTILITY COMPANIES, RECOMMENDED BY UNIVERSITY ECONOMISTS (WESTERN STATES) FOR ECONOMIC EFFICIENCY/EQUITY REASONS
10. ALTERNATIVE FEED COST	*				*	10. DESIGNED BY UNIVERSITY OF NEBRASKA, USED IN NEBRASKA, MISSOURI, AND FS USE IN NORTHEASTERN REGION
11. WASH. STATE FEE FORMULA	*					11. INCLUDES ABILITY TO PAY, VARIABLE CARRYING CAPACITY, AND RANCHERS SHARE OF INVESTMENTS
12. RESIDUAL FORAGE VALUE					*	12. DESIGNED/USED BY AGRIC ECONOMISTS (UNIVERSITIES/FEDERAL AGENCIES) --BASIS FOR DETERMINING FINANCIAL STATEMENTS, NET WORTH

This study identified 44 State agencies, 63 local governments, and 11 other Federal agencies leasing grazing lands in the 16 Western States. The 1982 average fee was \$6.44 per AUM for grazing lands managed by each of these other government agencies. Data collected during the study indicated that

approximately 52.7 million acres were grazed by livestock under authority of these other public entities. The number of acres managed by each of these other government entities, and the combined average grazing fees for these States and local governments and other Federal agencies are shown in Appendix B, Figure B.13. Appendix B, Figure B.14, shows the 1981 fees charged by State Land Boards or Education Departments. The fees per AUM ranged from \$1.43 in Arizona to \$14 in Nebraska. Formulas were the most common means of fee determination on the State lands, with some States using the PRIA fee formula. Fee methods used by State wildlife agencies and other Federal agencies are shown in Appendix B, Figure B.15. Bidding is the most common means of fee determination for these agencies.

Unlike the BLM and the FS, range resource management for domestic livestock production is not a major objective of programs being carried out by these other agencies and governments. With the exception of the Bureau of Indian Affairs, grazing is secondary to their main program objectives. Grazing is carried out either to make productive use of lands currently not needed for primary programs or to facilitate their primary programs.

Grazing Fee Systems Considered

The existing PRIA fee system and the following five alternative grazing fee systems are being considered by the FS and the BLM:

1. The PRIA formula with a base value derived by updating the 1966 base value and technical modifications to the formula indexes.
2. A modified PRIA fee formula with a base value from the appraisal and technical modifications to the indexes.
3. The PRIA formula with technical modifications and a base value derived from combining the updated 1966 data with the 1978-1983 private grazing price data.
4. A modified market value formula which uses a base value from the appraisal for either westwide or pricing area application, with the FVI weighted by public land AUM's in each of the 16 Western States.
5. Competitive bidding for both a short - and long-term grazing permit.

Some alternative fee formulas include an ability to pay adjustment (beef cattle prices and costs of livestock production) to help stabilize the public lands sector of the Western livestock industry. This step recognizes Congress' concern that a public land grazing fee system ". . . should prevent economic disruption and harm."

PRIA FORMULA (No Change) FEE SYSTEM

The PRIA grazing fee formula was discussed in Chapter 3. The PRIA formula is presented in this chapter as the "No Change" alternative; it also serves as a basis for comparing the other alternative formulas with the PRIA.

$$\text{Formula: Calculated Fee} = \$1.23 \times \frac{\text{FVI} + \text{BCPI} - \text{PPI}}{100}$$

Where:

\$1.23 = the 1966 Base Value

FVI = the Forage Value Index

BCPI = the Beef Cattle Price Index

PPI = the Prices Paid Index

1983 Calculated Grazing Fee: \$1.40 per AUM

PRIA-UPDATED BASE VALUE FEE SYSTEM

Description: This alternative uses a base value that is derived from indexing the 1966 WLGS nonfee costs and private grazing lease rates to a 1980-1984 base period. Updating the 1966 data is based on the assumption that the relationship of private lease rates to nonfee costs has not changed.

The 1966 WLGS used an economic grazing fee model described in Chapter 3. The base value for public lands was equal to the difference between total costs of operating on private leased grazing lands and total nonfee costs of grazing public rangelands. This difference is \$1.26 per AUM for cattle, and \$1.13 per AUM for sheep. Weighting these cost figures by cattle and sheep AUM's results in the \$1.23 per AUM base value.

The formula with technical modifications is:

$$\text{Fee} = \text{BV} \times \frac{(\text{FVI} \times (\text{BCPI}/\text{ICI}))}{100}$$

Where:

BV = Base Value derived by updating the 1966 WLGS results

FVI = Forage Value Index based on the AUM weighted private grazing land lease rate for the 16 Western States, 1980-1984 = 100

BCPI = Beef Cattle Price Index, existing beef cattle prices weighted by AUM's for the 16 Western States, 1980-1984 = 100

ICI = Input Cost Index (derived from National Prices Paid Index), weighted to reflect all production costs (both farm and nonfarm origin) for typical cow-calf operations in the western region, 1980-1984 = 100

The modified indexes and their derivation are shown in Figure 4.2. For the derivation of the updated base value see Appendix A.1.

Figure 4.2: Computation of Annual Index Values for FVI, BCPI, and ICI, and the Basic Price Data for these Indexes, 1980-1985

Data Year	Fee Year	Beef Cattle Prices	BCPI	Private Lease Rate	FVI	Input Costs Index (ICI)
1980-1984*		\$55.65	100	\$7.50	100	100
1980	1981	\$63.61	114	\$6.90	92	91
1981	1982	\$57.04	102	\$7.87	105	102
1982	1983	\$53.20	96	\$7.42	99	100
1983	1984	\$51.51	93	\$7.58	101	101
1984	1985	\$52.89	95	\$7.72	103	109
1985	1986	\$51.61	93	\$7.59	101	104

*Average values for the 1980-1984 base period.

Application: This alternative fee formula may only be applied on a westwide area basis. Application westwide uses the derived base value of \$2.34. The Formula Factor includes the technical modifications to the PRIA formula and is the product of the FVI X BCPI/ICI divided by 100. An example of the fee calculation for the 1983 fee year follows:

$$1983 \text{ Fee} = \$2.34 \times .95 = \$2.22 \text{ per head month}$$

An example of this alternative for the 5-year period, 1981-1985, is shown in Figure 4.3.

Figure 4.3: Westwide Calculated Fees for PRIA-Updated Base Value Fee System, 1981-1985

Data Year	Fee Year	Formula Factor	Calculated Fee Per Head Month
1980	1981	1.15	\$2.69
1981	1982	1.05	\$2.46
1982	1983	.95	\$2.22
1983	1984	.93	\$2.18
1984	1985	.90	\$2.11

MODIFIED PRIA FEE SYSTEM

Description: The Modified PRIA formula uses the same technical changes that were included in the preceding alternative formula, PRIA-Updated Base Value. This alternative differs from the previous alternative through use of a base value derived from the appraised market value of public land grazing.

The annual calculated fee for grazing is derived from the following fee formula:

$$\text{Fee} = \text{BV} \times \frac{(\text{FVI} \times (\text{BCPI}/\text{ICI}))}{100}$$

Where:

BV = Base Value for pricing areas or westwide (dollars per head month) from grazing market rental appraisal.

Other Indexes = Weighted FVI, BCPI and ICI used in the PRIA-Updated Base Value Alternative Fee System

Application: This alternative fee formula may be applied on either a westwide or a pricing area basis. Application westwide uses the appraised value (advance payment) of the lowest pricing area (Area 5 = \$4.68) as the BV. Use of the lowest appraised value (\$4.68 per AUM) is based on the economic alternative cost doctrine ". . .that a buyer will not pay a fee substantially in excess of the amount that he/she must pay for his next best alternative or, conversely that an agency should receive a return at least equal to the yield that could be realized from the next best alternative use of the land (Denio, Fulcher, Powell, Rader, and Ramsbacher, 1967.)"

Two-thirds (67 percent) of the public rangeland forage (AUM's) was appraised at values higher than \$4.68 per AUM (i.e. from \$5.31 to \$8.55 per AUM.) The use of \$4.68 per AUM underprices approximately 61 percent of the forage westwide. If a westwide weighted average of the appraised values per pricing area was used (appraised values weighted by the public land AUM's in each pricing area) the weighted value would be \$5.69 per AUM. A westwide average value would over price one-half of the forage and under price the remainder.

An example of the westwide fee calculation for the 1983 fee year follows. The computation of the westwide grazing fee for the years 1981 to 1985 is shown in Figure 4.4.

$$\text{Fee} = \$4.68 \times .95 = \$4.45 \text{ per head month}$$

Figure 4.4: Westwide Values of the Modified PRIA Fee System, 1981-1985

Data Year	Fee Year	Formula Factor	Calculated Fee Per Head Month
1980	1981	1.15	\$5.39
1981	1982	1.05	\$4.91
1982	1983	0.95	\$4.45
1983	1984	0.93	\$4.35
1984	1985	0.90	\$4.21

Application by pricing areas uses the appraised value (advance payment) as the new BV and the formula factors shown in Figure 4.4. The economic value 1983 fee computation for 1981 to 1985 by pricing area is shown in Figure 4.5.

Figure 4.5: Modified PRIA Calculated Grazing Fees for Individual Pricing Areas 1 - 6, 1981-1985

Fee Year	Formula Factor	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6
BV		\$8.55	\$6.39	\$6.84	\$5.31	\$4.68	\$5.76
1981	1.15	\$9.83	\$7.34	\$7.87	\$6.11	\$5.38	\$6.62
1982	1.05	\$8.98	\$6.71	\$7.18	\$5.58	\$4.91	\$6.05
1983	0.95	\$8.12	\$6.07	\$6.50	\$5.04	\$4.45	\$5.47
1984	0.93	\$7.95	\$5.94	\$6.36	\$4.93	\$4.35	\$5.35
1985	0.90	\$7.70	\$5.75	\$6.16	\$4.78	\$4.21	\$5.18

COMBINED VALUE FEE SYSTEM

Description: The Combined Value fee formula uses the 1966 WLGS data and the indicated westwide market value of \$5.99 per AUM that was observed by the FS and BLM appraisers in a separate market analysis. The supplemental report of westwide private grazing lease rates was adjusted 5 percent for comparability differences, and 10 percent for advance payment, resulting in a 1983 westwide estimate of comparable private lease rate value of \$5.99 per head month (AUM).

Updating the 1966 WLGS value to 1983 resulted in an updated base value of \$2.34 per AUM. This base value was derived by subtracting the updated differential cost (i.e., the difference in costs of grazing public rangelands as opposed to leased private rangelands) from the updated 1966 private grazing land lease rate. See Appendix A.2 for the derived base value. This approach combines historically used fee value estimates with 1983 indicated westwide market value for public land grazing with equal weight. These values also could be weighted differently. For illustration, this alternative uses a base value of \$4.16 per AUM which is the mean average of the 1983 westwide private lease rate of \$5.99 and the updated 1966 base value of \$2.34.

The formula is: Fee = BV x $\frac{(FVI \times (BCPI/ICI))}{100}$

Where: BV = Base Value derived by averaging the \$5.99 arrived at through market analysis and the \$2.34 arrived at through updating the 1966 WLGS data.

Other Indexes = Weighted FVI, BCPI and ICI used in the PRIA-Updated Base Value Alternative Fee System

Application: This fee alternative would only be applied westwide (16 Western States). An example of the 1983 westwide application follows. The calculated fee for 1981 to 1985 for this alternative is shown in Figure 4.6.

$$1983 \text{ Fee} = \$4.16 \times .95 = \$3.95 \text{ per head month}$$

Figure 4.6: Westwide Calculated Grazing Fees for the Combined Value Fee System, 1981-1985

Data Year	Fee Year	Formula Factor	Calculated Fee Per Head Month
1980	1981	1.15	\$4.74
1981	1982	1.05	\$4.33
1982	1983	0.95	\$3.95
1983	1984	0.93	\$3.83
1984	1985	0.90	\$3.74

MODIFIED MARKET VALUE FEE SYSTEM

Description: This alternative uses the 1983 grazing rental appraisal estimates of market value of forage as the base value and the forage value index as the annual adjustment factor. This alternative can be applied on either a westwide basis or by pricing area. The formula only considers the market value of grazing. The formula is:

$$\text{Fee} = \frac{\text{BV} \times \text{FVI}}{100}$$

Where: BV = Base Value through Market Rental Appraisal by animal class for pricing areas or westwide (dollars per head month)

FVI = Forage Value Index based on the AUM weighted private grazing land lease rate for the 16 Western States, 1980-1984 = 100

Application: The Modified Market Value fee system can either be applied on a westwide or a regional basis. A 1983 example of westwide application for mature cattle is based on the lowest pricing area values by animal class. The westwide application uses the lowest appraised value (Price Area 5 value of \$4.68 per AUM) for the reasons stated under the Modified PRIA Fee System as follows:

$$1983 \text{ Fee} = \$4.68 \times .99 = \$4.63 \text{ per head month}$$

Fees may also distinguish between mature cattle, yearling cattle, and sheep. Calculated fees for the years 1981 to 1985 by animal class for westwide applications of this alternative fee system are shown in Figure 4.7.

Figure 4.7: Westwide Calculated Grazing Fees For the Modified Market Value Fee System by Animal Class, 1981-1985

Data Year	Fee Year	FVI/100	Mature Cattle 1/	Yearlings 2/	Sheep 3/
BV:			\$4.68	\$4.05	\$0.95
1980	1981	0.92	\$4.31	\$3.73	\$0.87
1981	1982	1.05	\$4.91	\$4.25	\$1.00
1982	1983	0.99	\$4.63	\$4.01	\$0.94
1983	1984	1.01	\$4.73	\$4.09	\$0.96
1984	1985	1.03	\$4.82	\$4.17	\$0.98

1/ Mature Cattle based on price Area 5

2/ Yearlings based on price Area 6

3/ Sheep appraised on a westwide basis

An example of a fee for yearlings in pricing area 3 for 1983 is as follows:

$$1983 \text{ Fee} = \$5.26 \times 99 = \$5.21 \text{ per head month}$$

The regional application would use the appraised base value by animal class for each pricing area. It would vary by region, as shown in Figure 4.8.

Figure 4.8: Calculated Grazing Fees by Animal Class and Pricing Areas with Modified Market Value Grazing Fee System, 1981-1985

Fee Year	FVI/100	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6
Mature Cattle BV:		\$8.55	\$6.39	\$6.84	\$5.31	\$4.68	\$5.76
1981	0.92	\$7.87	\$5.88	\$6.29	\$4.89	\$4.31	\$5.30
1982	1.05	\$8.98	\$6.71	\$7.18	\$5.58	\$4.91	\$6.05
1983	0.99	\$8.46	\$6.33	\$6.77	\$5.26	\$4.63	\$5.70
1984	1.01	\$8.64	\$6.45	\$6.91	\$5.36	\$4.73	\$5.82
1985	1.03	\$8.81	\$6.58	\$7.05	\$5.47	\$4.82	\$5.93
Yearlings BV:		\$6.39	\$5.76	\$5.31	\$4.86	\$4.68	\$4.05
1981	0.92	\$5.88	\$5.30	\$4.89	\$4.47	\$4.31	\$3.73
1982	1.05	\$6.71	\$6.05	\$5.58	\$5.10	\$4.91	\$4.25
1983	0.99	\$6.33	\$5.70	\$5.21	\$4.81	\$4.63	\$4.01
1984	1.01	\$6.45	\$5.82	\$5.36	\$4.91	\$4.73	\$4.09
1985	1.03	\$6.58	\$5.93	\$5.47	\$5.01	\$4.82	\$4.17

COMPETITIVE BID FEE SYSTEM

Competitive bidding is an efficient and effective system for measuring and acquiring fair market value. Such a procedure would reflect the fair market value and would account for the variations in the conditions and values related to livestock grazing. The amount that the user pays and that the public receives is equivalent to what each would be expected to pay or receive

if they were private individuals involved in private transactions. It also should be recognized that major obstacles, such as changes in law and policy, would have to be overcome before competitive bidding could be implemented. The competitive bid alternative would require some legislative and regulatory changes. Two subalternatives are presented. The long-term competitive bidding system would correspond to the 10-year term permit for security of tenure. The short-term method would use a bonus-bid method that would lock fees in for the short-term permitted use period.

Long-Term Competitive Bid System, 10-Year Term Permit

Competitive bidding would be used to establish grazing fees for 10-year term permits for established allotments. Fair market value may not be achieved if there is an absence of bidding competition. Some Federal grazing leases may have only a single interested bidder; therefore, the grazing fee would be equal to a minimum acceptable bid. This process would avoid excessively low bids in case of no competition. The successful bidder's fees over the life of the contract lease (10-year bid period) may be adjusted through use of the FVI or other alternative fee adjustments, such as an index that reflects the price of hay or other feed substitutes. If fees are indexed, the formula for the annual updating of the fee is:

$$\text{Fee} = \frac{\text{BV} \times \text{Index}}{100}$$

Where: BV = Base Value derived from the competitive bid or minimum bid price

Index = Index of private grazing land lease rates or cost of alternative feed sources

Short-Term Competitive Bid System, 3-Year Term Permit

The Short-Term Competitive Bid fee system would generally follow the same procedures as the long-term pricing method. The primary exceptions are: (1) a 3-year term permit, and (2) no adjustment for market changes during the permit period. The Short-Term Competitive Bid system would implicitly reflect changes in the grazing rental market. Fair market value may not be achieved if there is an absence of bidding competition such as a single interested bidder; therefore, the grazing fee would be equal to a minimum acceptable bid. Fees during the life of the permit period would be fixed through the minimum bid price plus a bonus bid, the sum of which would establish market value. Grazing fees would be established through the following fee process.

Fee Determination:

Three Year Grazing Fee = Value set by Appraisal or Minimum Bid Price plus Bonus Bid.

ALTERNATIVE IMPLEMENTATION SCHEDULES

The impact of grazing fee changes on permittee ranchers can be graduated over time by employing alternative implementation schedules. The alternative schedules presented are: 15 percent limitation, 25 percent limitation, 33.3 percent limitation, and 50 percent limitation on the change from the

previous year in any year. These rates all result in a graduated but accelerating implementation in successive years. This makes the earlier year adjustments more gentle and later year adjustments stronger as operating adjustments are made. Any change in fee policy that results in an increase above PRIA fee rates could be implemented over either a 3-, 5-, or 10-year period to reduce economic impacts. The 1983 PRIA grazing fee level was \$1.40 per animal month. Using the appraised value of \$4.68 per head month (Area 5) for illustration, Figure 4.9 shows the number of years that it would take to reach market value under the implementation schedule. The calculations make no adjustment for inflation or deflation.

The 50 percent limitation would allow the fee to reach the level of the Modified Market Value fee system in 4 years. This contrasts with the 15 percent limit which would not reach the Modified Market Value fee level until the tenth year. The degree of impact to public permittees would be inversely proportional to the speed of implementation. The amount of real Government revenues will depend on the amount of time taken to implement a change in grazing fee system. The calculations in Figure 4.9 are for illustration only and do not imply a preferred grazing fee system:

Figure 4.9: Alternative Implementation Schedules to Phase in Fee Changes From the 1983 Grazing Fee Level

	Years to Achieve									
	1	2	3	4	5	6	7	8	9	10
	dollars per head									
50% Limit	1.40	2.10	3.15	4.68						
33.3% Limit	1.40	1.87	2.49	3.32	4.42	4.68				
25% Limit	1.40	1.75	2.19	2.73	3.42	4.27	4.68			
15% Limit	1.40	1.61	1.85	2.13	2.45	2.82	3.24	3.72	4.28	4.68

The above shows a direct linear change. Annual changes in formula indexes will affect incremental increases to reach a base value above the current base.

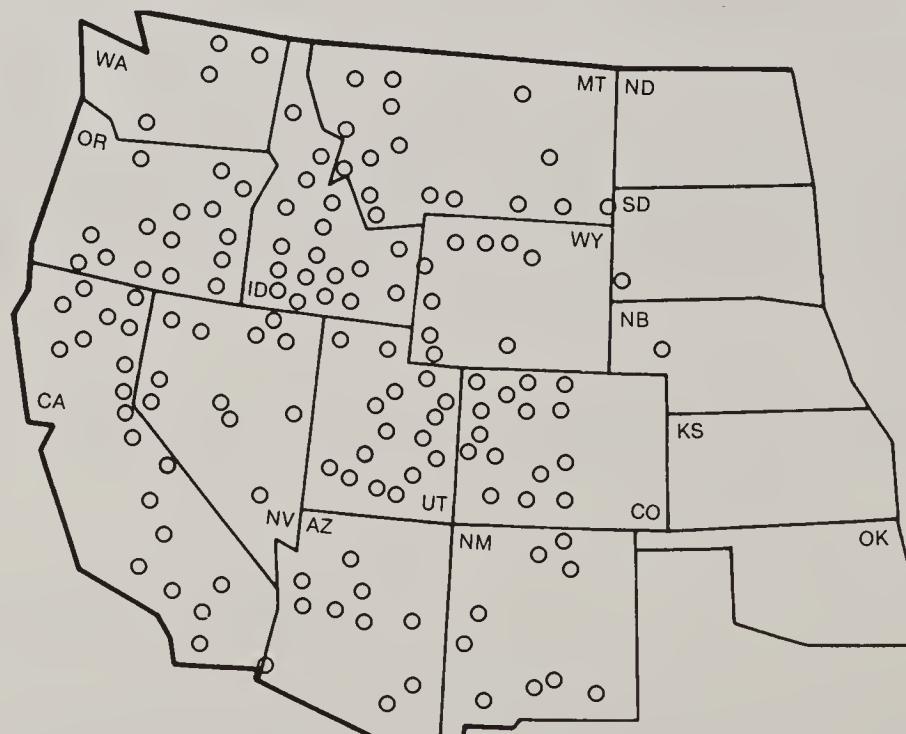
CHAPTER 5. EFFECTS OF FEE LEVEL CHANGES, CURRENT CONDITIONS AND THE ECONOMIC OUTLOOK

This chapter provides background information and examines the sensitivity of specific factors such as: herd size, dependency of the permittee on public lands, State differences in economic conditions, short and long-term impacts and the economic viability of ranching operations. In addition, this chapter describes the economic outlook for the livestock industry and the potential impacts of fee level changes on personal income and employment for the 13 Western States and selected counties.

PERMITTEE INCOME EFFECTS

Average Ranch Budgets: The analysis of economic effects on permittees is based on a USDA ERS analysis of representative ranch budgets. The ERS developed 427 cattle budgets and 73 sheep budgets representing typical permittees' ranching operations in 13 Western States (Gee, 1984). Areas on which budgets were prepared are shown in Figure 5.1. The budgets were aggregated to develop an average cattle and sheep budget for each State. The average budgets were used to develop a computer program that examined the changes in total sales, net returns above cash costs, and net returns with all costs covered, including capital replacement costs, as a result of changes in the grazing fee. A short-run analysis focuses on the returns above cash costs since cash costs must be covered for the rancher to remain in business. The rancher often can postpone payments for capital replacements, returns to management, and family labor. Therefore, if cash costs are covered, the rancher can stay in business, at least in the short run. In the long run, equipment must be replaced and some return must be given to land and management if the rancher is expected to stay in business. The analysis examines short-term economic effects, long-term economic impacts when all costs must be paid under present technology and current market and financial conditions, and overviews the economic outlook for agriculture and the range livestock industry.

Figure 5.1: Geographic Locations Represented by Ranch Enterprise Budgets



Permittee Dependency On Federal Forage: The level of dependency is important in analyzing the effects of fee changes on a livestock business. A cow herd that is dependent on Federal rangeland for 50 or more percent of its annual feed supply will be affected more by a fee increase than a herd that depends on the Federal range for only 10 percent of its feed supply. Figure 5.2 shows the average level of dependence of permittee businesses on the Federal rangelands and the total number of permittees. It is important to note that the data are based on the total forage needs of the producer's livestock herd rather than the amount of range grazing required. Producers in the arid southwest are the most dependent. In these States, where large amounts of Federal lands exist, many producers graze public rangelands yearlong. Cattle producers in Arizona, New Mexico, Nevada, and Utah average more than a 30 percent level--with Arizona the highest at 60 percent. Montana permittees have the lowest dependency level for cattle--averaging only 11 percent. The median dependency level is 23 percent. The states of Idaho, Oregon, and Wyoming are at this level. Most sheep producers with permits are heavy users of public rangeland. Those in New Mexico are dependent for almost half their feed supply. Utah and Nevada also are high, averaging more than 40 percent.

Figure 5.2: Average Dependency Level of Permittee Livestock Businesses on Federal Rangeland for Annual Feed Supply in 13 Western States

State	-----Dependency 1/---		-----Permittees 2/---	
	Cattle Percent	Sheep 3/ Percent	Number	Percent Of Total
Arizona	60	*	1090	4
California	15	24	1465	6
Colorado	25	37	2670	10
Idaho	23	35	3675	14
Montana	11	35	4710	18
Nebraska	13	*	120	--
Nevada	36	43	930	3
New Mexico	44	49	3000	11
Oregon	23	27	1790	7
South Dakota	12	*	640	2
Utah	35	47	3110	12
Washington	13	*	450	2
Wyoming	23	29	2940	11

1/ Dependency is defined as AUM's of feed provided by Federal rangeland divided by total annual AUM's required by the entire livestock herd.

2/ Forest Service and Bureau of Land Management Records

3/ Sheep budgets were not prepared in these States (*) due to low numbers of sheep grazing public rangelands.

Source: Gee, 1984

Changes In Returns Above Short-Term Cash Costs: The short-term changes in returns above cash costs (net ranch cash income) on the average permittee livestock operation in 13 Western States are shown in Figure 5.3. These impacts are based on permittee livestock enterprise budgets collected and analyzed by the USDA's ERS for the FS and BLM. When the grazing fee was increased from \$2 to \$5 per AUM, net returns above cash costs declined. This reflects the increased cost of forage and associated interest on operating capital. The results show a positive return in every case. In the short-term, the average producer would be able to cover production costs while maintaining current herd levels. In the short-term herd, size

and gross income remain constant under each fee level, but may change over a longer period (Gee, 1984). This also assumes that permittees would be able, in this time period, to defer cash interest costs on any intermediate or long-term debt.

Figure 5.3: Changes in Returns Above Variable Cash Costs for an Average Livestock Operation at Different Fee Levels, 1982

State	Returns Above Cash Costs At Different Fee Levels 1/				
	\$0.00	2/	\$1.86	\$3.00	\$5.00
Gross Income					
Cattle: -----dollars per cow-----					
Arizona	211	99	82	72	54
California	252	62	58	56	52
Colorado	289	80	73	69	62
Idaho	247	49	44	40	34
Montana	276	79	77	75	72
Nebraska	305	120	117	115	112
Nevada	215	46	35	29	17
New Mexico	238	106	93	86	72
Oregon	253	88	82	78	72
S. Dakota	229	36	33	31	28
Utah	220	47	37	32	21
Washington	284	79	75	73	69
Wyoming	263	88	82	79	73
Sheep 3/ -----dollars per ewe-----					
California	50	20	19	19	18
Colorado	61	25	23	22	21
Idaho	64	33	31	30	29
Montana	56	23	22	21	19
Nevada	53	28	26	25	23
New Mexico	49	18	16	15	13
Oregon	60	17	16	15	14
Utah	59	27	25	23	21
Wyoming	57	26	25	24	23

1/ Cash costs do not include value of family labor, capital replacement allowance (depreciation) or interest on intermediate or long-term debt.

2/ Assumes free grazing.

3/ Sheep budgets were not prepared for Arizona, Nebraska, South Dakota, or Washington due to low numbers of sheep grazing public lands in these States.

Source: Gee, 1984

Changes in Returns Above All Costs: Figure 5.4 shows the impact of increased grazing fees on dollar returns above all costs on a per cow or ewe basis where all costs must be paid, if the permittee is to stay in business. Impact data is for the average livestock operation in each of the States. This analysis does not attempt to estimate economic impacts under a long-term projected situation. It simply shows, under 1982 conditions at varying fee levels, the economic impact (i.e. reduced returns above all costs) when all costs must be paid. The analysis uses average ranch budgets prepared by ERS for the year 1982 adjusted for a twenty percent debt/asset relationship. Economic conditions for the livestock industry in 1982 were about the average for conditions over the past 10 years (1975-1985).

Figure 5.4: Changes in Returns Above All Costs for an Average Livestock Operation at Different Fee levels, 1982

State	Returns Above All Costs At Different Fee Levels 1/				
	\$0.00	2/	\$1.86	\$3.00	\$5.00
Gross Income					
Cattle: -----dollars per cow-----					
Arizona	211	17	0	-11	-29
California	252	-26	-30	-32	-36
Colorado	289	-31	-37	-41	-48
Idaho	247	-54	-60	-64	-70
Montana	276	-16	-19	-21	-24
Nebraska	305	5	2	1	-3
Nevada	215	-45	-56	-62	-74
New Mexico	238	15	3	-5	-18
Oregon	253	5	-1	-4	-11
S. Dakota	229	-84	-87	-89	-92
Utah	220	-62	-72	-77	-88
Washington	284	-32	-35	-37	-41
Wyoming	263	-19	-25	-28	-34
Sheep: 3/,4/ -----dollars per ewe-----					
California	50	3	2	1	0
Colorado	61	9	8	7	5
Idaho	64	15	13	12	11
Montana	56	4	3	2	1
Nevada	53	9	7	5	3
New Mexico	49	-3	-5	-6	-9
Oregon	60	-6	-7	-8	-9
Utah	59	10	7	6	3
Wyoming	57	8	7	6	5

1/ Returns are adjusted for 20 percent debt/asset ratio which do not appear in original ERS tables.

2/ Assumes free grazing.

3/ All costs include standard cash costs, interest on intermediate and long-term debt (20 percent debt/asset ratio), value of family labor and capital replacement allowance (depreciation).

4/ Sheep budgets were not prepared for Arizona, Nebraska, South Dakota, or Washington due to low numbers of sheep grazing public lands in these States.

Source: Gee, 1984

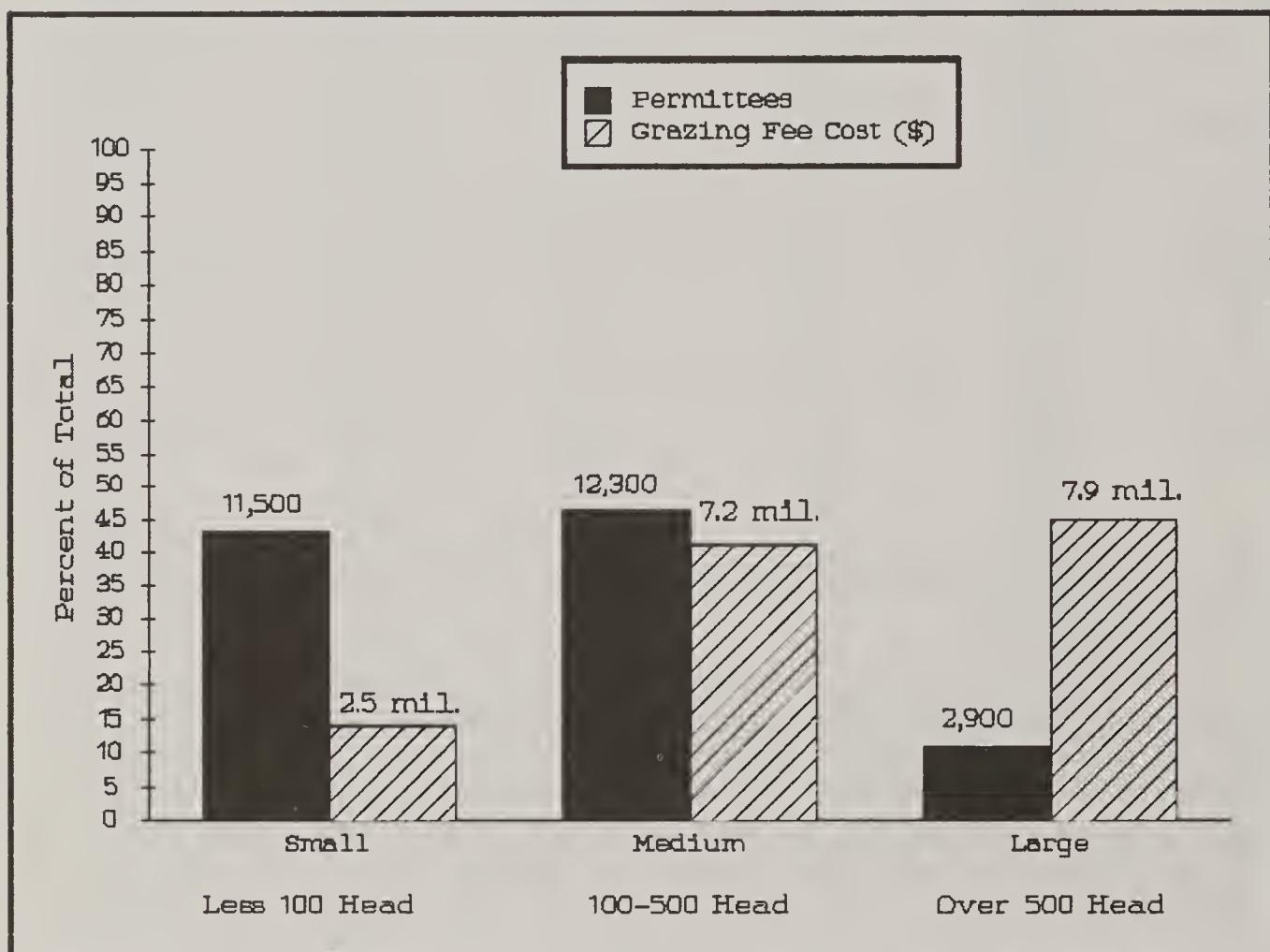
The interest on debt included in the calculation of all costs is based on the assumption that level of indebtedness for permittees is about the same as it is for all of the Western livestock industry. The data show that returns above all costs are negative for the average permittee cattle operation in all States except New Mexico and Nebraska. This is based on a grazing fee of \$1.86 per AUM. The data also shows returns above all costs at a zero fee level. When the fee is increased to \$3 per AUM, only Nebraska shows a positive net return. Average sheep operations show positive returns at \$5 for all States except New Mexico and Oregon.

Distribution of Aggregate Financial Impacts. Figure 5.5 shows the distribution of permittees and grazing fee costs by permittee herd size class. The aggregate financial impact of a change in grazing fees varies

proportionately with the distribution of AUM's. An increase in fees of \$1 per AUM would increase total grazing fee costs to the 26,700 FS and BLM permittees by about \$17.6 million. About 15 percent of the total 31,400 permittees have both FS and BLM grazing permits.

About \$7.9 million (45 percent of the \$17.6 million) would be paid by 2,900 permittees in the large permittee size class. These permittees represent 11 percent of all permittees. About 11,500 small livestock permittees, who represent 43 percent of the permittees, would pay about \$2.5 million or about 14 percent of the total dollar increase in fees. The \$7.2 million balance of the total fee increase would be paid by about 12,300 medium herd size permittees, representing 46 percent of the permittees.

Figure 5.5: Distribution of Permittees and a \$1 Increase In Fee Costs by Herd Size Class for All Permittees 1/



1/ Fifteen percent of permittees have both FS and BLM grazing permits, therefore, the total number of permittees is 27,600.

Livestock Herd Size: The size of livestock operations dependent on public rangeland varies from a few head to several thousand head. Returns above cash costs by herd size for BLM and FS permittees at different fee levels are shown in Figure 5.6.

Figure 5.6: Impacts of Alternative Grazing Fee Levels on Cattle Enterprise's Return Above Variable Cash Costs of Public Rangeland Permittees, 1982 1/,2/

Grazing Fee	FS			BLM		
	Small	Medium	Large	Small	Medium	Large
-----dollars per cow-----						
1.86	74	68	101	60	77	73
2.00	73	68	100	60	77	73
4.00	64	60	94	49	66	64
6.00	55	51	87	39	56	54

1/ Cash costs do not include value of family labor, capital replacement allowance (depreciation) or interest on intermediate or long-term debt.

2/ Rounded to nearest one dollar.

Source: Gee, 1984.

"There are economies of size in livestock production which can affect a permittee's ability to assimilate fee increases (Gee, 1984)." Enterprise costs and returns for different sizes of cattle and sheep herds prepared by the ERS indicate that larger herds usually have lower costs per head and larger returns above cash costs than smaller herds as well as a lower dependency level. This is also illustrated by livestock budgets prepared by the ERS for FS and BLM permittees. This gives the permittees with larger herds more flexibility in diverting additional resources to pay higher grazing fees.

"Since larger herds generally depend less on public rangelands than medium or small herds and usually have higher returns above cash costs, they should be impacted less by fee increases. Returns above cash costs as fees increase are reduced much less with large herds than with small herds. In most geographical areas [in the 16 Western States] this pattern of response occurred. In the few exceptions [of] higher dependencies with large [livestock] herds [fee increases] resulted in greater . . . impacts on return above cash costs (Gee, 1984.)"

Generally, BLM permittees with medium size herds and FS permittees with large size herds are more economically efficient since they have higher returns above cash costs per cow. Fee changes may cause some changes in the size of cattle herds and possibly some nonuse of Federal rangelands. This will occur in each of the size groups, but predominate in the medium herd size groups of FS permittees and the small herd size group for the BLM.

Fee Costs, Forage Dependency and Livestock Prices: The level of dependency and percentage that grazing fee costs are of total cash costs are primary indicators of the potential economic impact of fee level changes. Figure 5.7 compares economic impacts under situations of high, low, and median (mid level) dependency on public rangeland forage. Of the 13 Western States included in the ERS analysis, the average Arizona cattle operation, at 60 percent, has the highest level of forage dependency. The average cattle

operation in Montana, at 11 percent, is the least dependent. The average cattle operation in Idaho, at 23 percent, is at the median level of dependency. Idaho is shown for comparison purpose, but Oregon and Wyoming permittee livestock producers also depend on public rangeland forage for 23 percent of their total livestock forage supply. (See Figure 5.2 for number of permittees and average dependency of other States.)

Grazing fee costs, at \$1.86 per AUM, are 3 percent of the cash costs for operations with a median forage dependency of 23 percent. Increasing fees to \$4 per AUM, increases the percentage to 6 percent of total cash costs. The percentage that fee costs are of cash costs reaches 25 percent, with 60 percent dependency (Arizona) and a fee of \$4 per AUM. For the average Montana cattle permittee with 11 percent dependency, fees are 3 percent of total cash costs at a \$4.00 fee level. It should be kept in mind that these comparisons are based on average livestock operations for the States and that the full range of forage dependency exists within any one of the States.

Figure 5.7: Comparison of Grazing Fee Costs for an Average Cattle Operation at Different Dependency and Grazing Fee Levels, 1982

State	Dependency	\$1.86 Fee			\$4.00 Fee		
		Fee 1/ Cost 2/	Cash Cost 3/	Percentage of Cash Cost	Fee Cost	Cash Cost	Percentage of Cash Cost
		%	(---\$/Cow---	%	(---\$/Cow---	%	
Arizona	60	\$17	\$127	13	\$36	\$148	24
Montana	11	\$ 3	\$199	1	\$ 6	\$202	3
Idaho	23	\$ 6	\$203	3	\$13	\$210	6

1/ Dependency is AUM's of feed provided by Federal rangeland divided by total annual AUM's required by the entire livestock herd.

2/ Total number of federal AUM's per cow multiplied by fee.

Arizona example: 9 AUM's per Cow x \$1.86 = \$16.74 (\$17 rounded).

3/ Cash costs exclude value of family labor, capital replacement allowance (depreciation), and interest on intermediate or long-term debt.

4/ Amount is more than the increase in fee cost due to inclusion of interest on operating capital.

Livestock enterprise returns are much more sensitive to changes in livestock prices than they are to changes in grazing fees. According to the ERS ranch enterprise budgets, the median Idaho cattle operation produces about 306,000 pounds of beef annually and has a grazing fee bill of \$3,900 at a fee of \$1.86 per AUM. Increasing the fee to \$4 per AUM increases the grazing bill by \$4,515, annually. A \$2 per hundredweight increase in livestock prices, under 1982 prices and costs of production, would increase gross sales by \$6,120 and would be more than enough to off-set the increase in the cost of the federal grazing fee. A decrease in other livestock production costs such as feed grains also would tend to offset any increase in Federal grazing fees.

The Arizona average permittee cattle operation (60 percent dependency) produces about 210,000 pounds of beef annually and has a grazing fee bill of

\$9,200 at a fee of \$1.86 per AUM. An increase in fees by \$2.14 per AUM (\$4/AUM Fee Level) increases total fee costs by \$10,600 annually. A \$5 per hundredweight increase in live-weight beef cattle prices, under 1982 prices and costs of production, would be required to offset the increase in fees.

There is a wide range in profitability among livestock enterprises within a State, as well as between States; and this affects the potential economic impact of fee changes. Variable factors of location, climate, topography and/or physiography, along with management, and resource availability, will affect the economics of each livestock enterprise. As shown in Figure 5.8, gross income per cow, total cash costs (including the variance in feed costs and grazing fees) and forage dependency vary widely for the States shown. All of these factors affect how grazing fee changes will impact permittees.

Figure 5.8: Comparison of Gross Income and Costs of Livestock Production at \$1.86 Grazing Fee, 1982

	Arizona	<u>Idaho</u> ^{1/}	Montana
-----Dollars Per Cow-----			
Gross Income	\$211	\$247	\$276
Total Cash Costs	\$127	\$203	\$199
Feed Costs	\$ 39	\$ 95	\$131
Grazing Fees	\$ 17	\$ 6	\$ 3
Return Above Cash Costs	\$ 84	\$ 44	\$ 77
-----Percent-----			
Federal Forage Dependency ^{2/}	60	23	11

1/ Median for 16 Western States

2/ Percent public rangeland forage is to the 12 month feed requirement for the livestock herd.

OTHER PERMITTEE EFFECTS

Off-Ranch and Other Enterprise Income: USDA-ERS studies show that farms with agricultural sales less than \$50,000, which include ranches with less than 100 head, depend primarily on off-farm income for a large proportion of their livelihood. Furthermore, these farms have tended to show negative average-net farm incomes over several years, yet most continue in operation (Agriculture Finance, Outlook and Situation Report ERS, Department of Agriculture, 1984). About 43 percent of all public rangeland permittees have less than 100 head of cattle. Many of these permittees have off-ranch income, and some have other agricultural enterprises, such as crops that are sold. Some ranch operations are owned by investors. Thus, losses in ranch income may be offset by other business and personal income. These off-ranch employment and other business income arrangements make it difficult to determine whether these operations would be forced out of business with an increase in grazing fees.

Effects on Permittee Asset Values: The public land permittees have tenure and use of public land grazing permits. Grazing permits are generally tied to the base property. When base property is sold, the FS requires the grazing permit to be waived to the Government. Permits are generally reissued to the

purchaser of the base property. The permit value is the result of permittee capitalization of the difference between the fee paid for grazing on public lands and the market rental value of the grazing over time. The permit value is commonly considered in the private sector as the permittee's property. It is included in the market price and loan value of the property. It is substantially discounted by lenders. The permittees contend that the premium paid to the outgoing permittee is a legitimate cost of doing business on the public rangelands and should be considered in establishing grazing fees.

The BLM and FS position historically has held that permit values are not included as a cost factor in grazing fee formulas. This position has been challenged in Federal courts by permittees as a taking of their property. The Federal courts have affirmed the position of the Agencies. Recognition of permit value would allow permittees to retain the capitalized value of a resource that belongs to the public. To include the permit value in the fee formula would keep the fee at a level lower than the market value.

Changes in the grazing fee affects the permittee's asset position as a result of the changes in the value of the permit. There is no information on the correlation between the change in permit value and change in grazing fees. Figure 5.9 shows the 1983 value of the permit observed in the grazing rental appraisal.

Figure 5.9: Value of the Public Land Permit Observed in the Grazing Rental Appraisal, 1983

STATE	BLM/FS AUM's	LOW	HIGH	AVERAGE
		----- per head month -----		
Arizona	1,804,369	\$75	\$300	\$114
California	944,597	\$35	\$92	\$53
Colorado	1,597,434	\$50	\$200	\$75
Idaho	2,747,787	\$30	\$150	\$60
Kansas 1/	120			
Montana	1,837,335	\$47	\$133	\$76
Nebraska	85,334	\$120	\$150	\$140
Nevada	2,743,959	\$33	\$45	\$40
New Mexico	2,880,010	\$35	\$348	\$103
North Dakota	261,363	\$50	\$ 60	\$53
Oklahoma 1/	475			
Oregon	1,442,014	\$56	\$60	\$56
South Dakota 1/	95,814			
Utah	2,425,300	\$42	\$100	\$50
Washington 1/	79,315			
Wyoming	2,594,592	\$45	\$75	\$49
TOTAL 2/	21,539,818			
Weighted Average 3/				\$68

1/ Not available or limited observations

2/ Total AUM's as reported in the appraisal

3/ Weighted by AUM's (minus AUM's in Oklahoma, South Dakota, Washington, and Kansas)

CURRENT CONDITIONS AND THE ECONOMIC OUTLOOK

A base year of 1982 is used in the economic impact analysis. Economic conditions during the 1980's have not been static as was shown by the cost of production index information presented in Chapter 3, and Figure 4.2, Chapter 4. This section overviews 1984-1985 economic conditions encountered by the agricultural industry and the range livestock sector, as well as a forecast of expected conditions. An economic outlook through the next 10 to 15 years may be made by looking at the structural changes since 1975 in the cow/calf sector and the total meat industry. Observation of past changes, together with changes that are expected to yet occur, provides a basis for considering future conditions for permittee and nonpermittee livestock producers when considering the equity of grazing fees to all interested and affected parties.

Financial Problems: A 1984 ERS study, followed by a January 1985 Survey of financial conditions of U.S. farms, indicated that the average debt/asset ratio was 19 percent (20 percent rounded) for western livestock farms (Financial Characteristics of U.S. Farms, USDA-ERS, 1985). The level of indebtedness, measured in terms of debt/asset ratio, is an important consideration in determining whether an increase in public land grazing fees will contribute to negative net returns. Payment of interest on intermediate and long-term debt is a real factor in the cost structure of modern-day livestock ranching.

Some permittees have a lower debt/asset ratio than the average and have positive returns. Others are more leveraged and have higher negative returns than the average would indicate. The 1985 ERS survey of financial conditions indicated that about 18 percent of the western livestock farms were over 40 percent leveraged, an indicator of significant financial stress. (See Appendix Figure B.16.)

In 1985, a number of highly leveraged permittee and nonpermittee livestock operations were forced to liquidate and/or declare bankruptcy even with a grazing fee of \$1.35 per AUM,. The situation has not improved over the past few years. Bankers surveyed by the American Banking Association estimated that about 0.5 percent of all farmers in the West declared bankruptcy in 1982. This increased to 1.2 percent in 1983 and to 2.3 percent in 1984. Estimates of the percentage of cow-calf operations declaring bankruptcy nationwide were 0.92, 1.3, and 2.0 percent in 1982, 1983, and 1984 respectively (Agricultural Finance, Outlook and Situation Report, 1984).

The financial problems incurred since 1980 will likely persist through the end of the decade (1989) and could extend into the early 1990's. Costs of production will likely be relatively stable as prices decline for some production inputs, while others may rise only with the lower inflation rate. However, cattle price increases will be limited by continued historically high total meat supplies (i.e. beef, poultry and hogs). Thus, net returns will remain relatively low. Large and expanding poultry supplies will partially offset the price effect of reduced beef inventories.

Herd Size Adjustment: Throughout the 1980's to date, record supplies of meat, drought, and severe cash flow problems have hindered the cow-calf sector of the beef cattle industry. Current financial stress in the livestock sector will likely persist through the end of the decade, particularly with eroding land values accompanying the current environment of reduced inflationary

expectations. Producers have experienced the largest drops in land values since the 1930's. In addition, commodity prices have remained low as supplies (meat and grains) have reached record levels.

The current cattle cycle began in 1979 with an inventory of 110 million head, nationwide. This inventory followed the sharpest liquidation ever experienced in the beef cattle industry. The nationwide inventory fell from a record 132 million head in 1975, to 110 million in 1979. The inventory expanded to 115.4 million on January 1, 1982, before the expansion was abruptly halted by financial problems. From 1982 to 1985, herds were reduced to 109.8 million head, the lowest since 1968. The sharpest drop in cattle numbers took place during 1984 as producers reduced the herd nearly 4 million head. Also, the 1984 calf crop was the lowest since 1963.

Unlike the late 1960's and early 1970's when rapidly expanding beef demand encouraged a large buildup of the Nation's beef cattle herds, producers during the 1980's have faced an extended period of low net returns (receipts less cash costs), drought-reduced forage supplies, and overall financial problems in agriculture. These factors led to a 7 percent decline in beef herds in the Great Plains and Western States during 1984.

Meat Production: Red meat and poultry production have set new records for each year since 1983. Continued expansion in the poultry sector and modest growth in the hog sector will be encouraged by the outlook for large domestic and world grain supplies, which will lead to lower feed grain prices. Total meat supplies through the end of the decade will probably remain substantially above the 1970-1984 average per capita consumption (retail weight basis) of 203 pounds. Thus, stronger long-term beef prices may only occur after 1990, but that will be conditioned on grain prices and the supply response of hog and poultry producers.

Beef demand will continue to be limited by sluggish consumer income gains and high prices relative to the other meats. In addition, poultry production, as a percent of per capita quantities consumed, should continue to expand and gain a larger share of the consumer market. In 1985, poultry's market share will likely increase to 33 percent, up from 21 percent in 1970. Beef, on the other hand, will likely lose its market share through the same period, going from 42 to 37 percent of total meat shares. Pork will maintain from 29 to 31 percent of the total consumer market for meat. Continued expansion in the poultry sector may gain an additional 2 points during 1986. Poultry producers will have an additional edge in expanding production as red meat production is reduced, particularly in light of the financial problems facing livestock producers and availability of low cost grain.

Cattle Inventory: The National cattle and calves inventory is expected to fall to about 106.5 million on January 1, 1986. Additional declines are expected to occur during 1986 and 1987. Increased heifer retention may not occur until 1986, then heifers will calve and enter the livestock herd in 1988. Thus, the cattle cycle may turn in 1989 and the inventory may begin to expand. Expansion is expected to occur at a much slower pace than during 1980's. Cash shortfalls may continue to be the major hindrance, and herd expansion also could be delayed since broiler and pork supplies are likely to rise in 1987. With fewer heifers calving and entering the cow herd, calf crops will remain low.

Land Values: Throughout the 1970's, ranch values increased rapidly, partially because rising inflation resulted in a speculative land value being capitalized into the price of the ranch. Capital to purchase land also was readily available at low nominal interest rates. For the 17 Western States, including Texas, land values increased 170 percent for the same period.

A change in monetary policy in late 1979 resulted in high interest rates and a sharp drop in the inflation rate during the 1980's. Accompanying a decline in expected land earnings was a drop in land prices. From 1984 to 1985, there was a 12 percent drop in land values, the largest since 1933. Because financial problems are occurring within the lending institutions, as well as with producers, lenders will emphasize future lending on a cash flow basis rather than past consideration of cash flow and land values.

Livestock Industry Stability: The cattle industry should begin to stabilize over the next 10 years, but the adjustment process has already been painful for many producers, especially the highly leveraged. Falling land values may continue to erode producer's equity and for those highly leveraged producers who experience severe cash shortfalls, herd liquidation is the only alternative. The next cattle cycle may find an inventory peak at less than 116 million cattle as producers and lenders both exercise caution. Once the industry adjusts to financial problems, large total meat supplies will be the one problem still facing cattle producers and the one factor that will limit rapid inventory growth at least the early-to-mid 1990's when productive capacity and population growth come more into balance.

STATE AND COUNTY EFFECTS

Payments to States and Counties: The FS returns 25 percent of the fees collected. The BLM returns 12.5 percent under Section 3, and 50 percent of the fees collected under Section 15 of the Taylor Grazing Act. Figure 5.10 shows the payments that would be made to Western states and counties at alternative grazing fee levels, assuming a constant level of grazing and full use of permitted forage.

Figure 5.10: Payments To Western States at \$1.86 Fee Level and Potential Payments at Alternative Grazing Fee Levels

Fee Levels	\$1.86	\$3.00	\$4.00	\$5.00	\$6.00
	Dollar Payments				
Arizona	788,400	1,271,600	1,695,500	2,119,400	3,543,200
California	516,200	832,500	1,110,100	1,387,600	1,665,100
Colorado	528,200	852,000	1,136,000	1,420,000	1,704,000
Idaho	655,200	1,056,800	1,409,100	1,761,400	2,113,600
Kansas	200	400	500	600	700
Montana	639,800	1,032,000	1,376,000	1,720,000	2,064,000
Nebraska	41,000	66,000	88,100	110,100	132,100
Nevada	546,800	881,900	1,176,400	1,469,800	1,763,700
New Mexico	946,600	1,526,700	2,035,600	2,544,500	3,053,400
North Dakota	9,000	14,600	18,400	24,300	29,300
Oklahoma	2,800	4,500	6,000	7,500	9,000
Oregon	509,900	822,300	1,096,400	1,370,500	1,644,600
South Dakota	119,300	192,500	256,600	320,800	384,900
Utah	498,800	804,600	1,072,700	1,340,900	1,609,100
Washington	78,200	126,100	168,200	210,200	252,200
Wyoming	943,100	1,521,100	2,028,200	2,535,200	3,042,300

State Personal Income and Employment Effects: A grazing fee change would have both positive and negative impacts on dependent rural communities, affected State and local governments, and others having an interest in the public rangelands. Alternative fee effects on other governments and the public are influenced in large part by the changes in State and county personal incomes and community employment resulting from grazing fee changes, and the disbursement of fee receipts to the Western states. The estimates of change in State personal incomes were developed by the FS using an inter-industry economic model (Implan II) which measures the effects of agricultural (range livestock) industry transactions and other sectors of local and regional economies (Alward and Sullivan, 1984). Computerized inter-industry transaction models were used to make estimates of changes in employment and income. These models measure not only the initial direct effects of changes in fees, but the round-by-round multiplier effect of economic expansion and contraction of the State economies.

Figure 5.11 shows the effect on total State income at different grazing fee levels. In total dollar terms, States would experience reductions in personal income up to a total of 19 million dollars for Utah, the highest at the \$6 fee level. This represents a reduction in State personal income of .2 percent (two-tenths of one percent). On a percentage basis, Idaho, Nevada and Utah are affected the most with the \$6 fee level estimated to reduce total State Personal Income by .2 percent (two-tenths of one percent). This represents a reduction in net income. The reduction in the spending of ranch household income would be partly offset, because about 80 percent of increases in fees would be returned to the local and State economies through Range Betterment Funds (50 percent) and through funds for roads and schools.

Figure 5.11: Summary of Reductions in Total Personal Income for All Western States (Sheep and Cattle Enterprises Combined), 1982 1/

	Grazing Fee per AUM			
	\$3.00	\$4.00	\$5.00	\$6.00
- MILLIONS OF DOLLARS -				
<u>CHANGES IN INCOME:</u>				
Arizona	3.97	7.90	11.84	15.77
California	3.33	6.62	9.91	13.20
Colorado	4.31	8.52	12.74	16.96
Idaho	3.31	6.56	9.82	13.08
Montana	2.22	4.42	6.62	8.82
Nebraska	0.18	0.35	0.53	0.70
Nevada	3.07	6.13	9.19	12.26
New Mexico	3.56	7.11	10.65	14.19
Oregon	3.86	7.64	11.42	15.19
So. Dakota	0.15	0.29	0.44	0.58
Utah	4.67	9.32	13.96	18.60
Washington	0.31	0.61	0.91	1.21
Wyoming	1.94	3.87	5.79	7.71
WESTWIDE	34.87	69.34	103.81	138.28

1/ All fee changes are computed from the 1982 \$1.86 per AUM basis.
Source: Alward and Sullivan, 1984.

Investing range betterment funds and disbursement of the States and counties share of receipts affects those economic sectors furnishing supplies and materials for range improvement and fish and wildlife habitat improvement, and to households through wage payments to construct or install these improvements. Monies returned for roads and schools have the greatest effect on the household sector, either through wages and salaries or reduced local taxes and through household consumption in other sectors. Changes in the effect on total State employment are shown in Figure 5.12.

Figure 5.12: Summary of Reductions in Total State Employment for All Western States (Sheep and Cattle Enterprises Combined), 1982 1/

	Grazing Fee per AUM			
	\$3.00	\$4.00	\$5.00	\$6.00
	<u>- NUMBERS OF JOBS -</u>			
Arizona	139.7	276.0	412.3	548.6
California	120.3	238.3	356.2	474.2
Colorado	158.7	311.9	465.0	618.2
Idaho	96.3	187.1	277.9	368.7
Montana	63.3	124.3	185.4	246.4
Nebraska	6.1	11.9	17.8	23.6
Nevada	68.5	135.3	202.1	268.9
New Mexico	99.2	193.3	287.4	381.5
Oregon	132.5	260.3	388.1	515.8
So. Dakota	4.5	8.8	13.1	17.4
Utah	189.5	375.9	562.3	748.8
Washington	10.0	19.7	29.5	39.3
Wyoming	29.6	55.6	81.5	107.4
WESTWIDE	1,118.1	2,198.3	3,278.5	4,358.7

1/ All fee changes are computed from the 1982 \$1.86 per AUM basis.
Source: Alward and Sullivan, 1984.

County Impact Analysis (Maximum Income Loss Scenario): Impacts at the county level were based on an analysis of maximum income loss using the first generation FS inter-industry input/output economic model (Implan I). This first generation model combines the meat and feed sectors of agriculture with the forestry and fishery economic sectors of local Western States' economies. When these sectors are combined there is a tendency to overstate the economic impacts.

A county in each State was identified that was estimated to have the maximum impacts as a result of changes in grazing fees. The identified counties were generally highly dependent on public rangelands and had small economic bases. Changes in the grazing fee were investigated based on two assumptions: (1) that no change in the use of public lands was made as a result of the fee increase, and (2) that use of the public land declined as a result of increased fees (Radtke and Brokken, 1984.) Figure 5.13 summarizes the results of the analysis based on the second assumption.

Permittee income is reduced as the fee increases, resulting in less spent on consumption goods. In addition, permittees decrease production expenditures as they reduce their herd sizes. The losses are partially compensated by increased Federal and local government expenditure as the fee increases. The possible total personal income loss and the percent personal income loss for the most impacted counties is shown. Catron County in New Mexico is the most impacted by grazing fee changes, with the \$6 fee resulting in a loss of 8.5 percent of the total county personal income.

Figure 5.13: Estimated Total County Income Reduction and Percent Reduction of Total County Income as the Result of Grazing Fee Increases, Assuming Herds Would be Reduced, 1982 dollars

State, County	-----Fee Levels in dollars -----		
	\$2.00	\$4.00	\$6.00
	-----thousands of dollars (%)-----		
AZ, Gila	548 (0.3)	960 (0.5)	1/
CA, Modoc	73 (0.1)	289 (0.5)	464 (0.8)
CO, Gunnison	122 (0.2)	483 (0.7)	780 (1.1)
ID, Owyhee	419 (1.2)	1,601 (4.4)	2,558 (7.1)
MT, Beaverhead	184 (0.4)	729 (1.5)	1,181 (2.4)
NV, Elko	199 (0.3)	761 (0.6)	1,128 (0.9)
NM, Catron	188 (1.5)	722 (5.7)	1,087 (8.5)
ND, Billings	2/	174 (1.9)	433 (4.7)
OR, Harney	435 (0.8)	1,629 (2.8)	2,632 (4.6)
SD, Fall River	2/	151 (0.3)	381 (0.7)
UT, Millard	262 (0.6)	1,017 (2.4)	1,671 (3.9)
WA, Garfield	3 (**)	10 (0.1)	16 (0.1)
WY, Sublette	221 (0.7)	886 (2.8)	1,430 (4.5)

1/ Impacts of grazing fees are analyzed at rates below or equal to State private lease rates or \$6 per AUM, whichever is smaller.

2/ National Grasslands fees are @2.86, so impacts were not computed.

Source: Radtke and Brokken, 1984

CHAPTER 6. EVALUATION OF ALTERNATIVE FEE SYSTEMS AGAINST CRITERIA

Criteria used to evaluate the PRIA and alternative fee systems were developed through public input, background studies, and analysis of the issues and concerns related to public land grazing fees. Based on information from these sources, the Departments of Agriculture and the Interior agreed to the following criteria: equity to all interested and affected parties, permittee impacts, equity among livestock producers, administrative feasibility, and consideration of other interests.

EQUITY TO ALL INTERESTED AND AFFECTED PARTIES

Grazing fees on public rangelands should be equitable (fair) to all interested groups and individuals. An equitable fee system to the General Public considers the public as a landowner receiving a return to property of value. A primary measure of equity in this regard is that fees should be similar to the price that would be charged if the forage resource was privately owned and available in the market place to all livestock producers.

The various grazing fee options generate different revenues to the Federal Government. Figure 6.1 shows the relative fee levels and resulting 1983 Government revenues for the fee options for which the fee can be directly calculated. The calculations are based on 17.6 million AUM's of 1983 actual grazing use, and assumes this level of forage would be demanded at the various alternative fee levels. These revenue projections are estimates. Depending upon the elasticity of demand for Federal forage the revenues may be less than projected.

The Modified PRIA, the Modified Market Value, and the Combined Value fee systems result in about the same level of Government revenue, approximately \$70 to \$80 million. The current PRIA fee system generated revenues of \$24 million in 1983. Revenues that might be generated by the competitive bid fee system were difficult to estimate. However, it is believed they would be at least as much as those generated by the Modified Market Value fee system.

Figure 6.1: Westwide Grazing Fee System Values, 1983

Fee System	1983 Value	1983 Revenue 1/
PRIA	\$1.40	\$24,640,000
PRIA-Updated Base Value	\$2.22	\$39,072,000
Modified PRIA	\$4.45	\$78,320,000
Combined Value	\$3.95	\$69,520,000
Modified Market Value--Mature Cattle	\$4.63	\$81,488,000
-Yearling Cattle	\$4.01	<u>2/</u>
-Sheep	\$0.94	
Competitive Bid		\$81,488,000

1/ Figures rounded.

2/ Revenue based on mature cattle only

A second consideration in assessing the fairness of a fee to all interested and affected parties is whether it covers the costs of grazing permit administration to the Federal Government. Although the costs of administering permitted livestock grazing should be recovered overall, the market value of the forage resource should be determined independent of the costs needed to recover grazing permit administration costs. Cost elements directly involved in administering grazing permits are: (1) allotment planning and inventory; (2) use supervision and management, and (3) range improvements. In 1983, cost of administering grazing permits and leases, by agency, were FS \$3.22 per AUM, and BLM \$2.65 per AUM. The 1983 combined Agencies' AUM weighted cost was \$2.87 per AUM. Alternative methodology used by the BLM in a study of rangeland program costs "with and without" livestock grazing indicated a 1983 permit administration cost of \$2.44 per AUM. (See Figure 1.4, Chapter 1.)

Figure 6.2 shows the relationship between Federal Government revenues under alternative fee options and the combined Agencies' costs of managing permitted livestock grazing on the public rangelands administered by the FS and BLM. The costs shown include allotment planning and other requirements that might not be imposed in private grazing management, but exclude the costs of grazing environmental impact statements, wild horse and burro management, or a general overhead allocation. Grazing environmental impact statements are being prepared for rangelands under BLM administration under a court ordered agreement. The costs of these EIS's is not included in total range program costs. These EIS's are a one-time effort, beginning in 1975 and ending in 1988. The costs of the effort declines each year as accomplishments are made. In 1983, the additional costs to the BLM rangeland program would have been \$0.10 per AUM.

Figure 6.2: Revenues Received from Grazing Fee Alternatives Compared to FS and BLM Permit Administration Costs, 1983

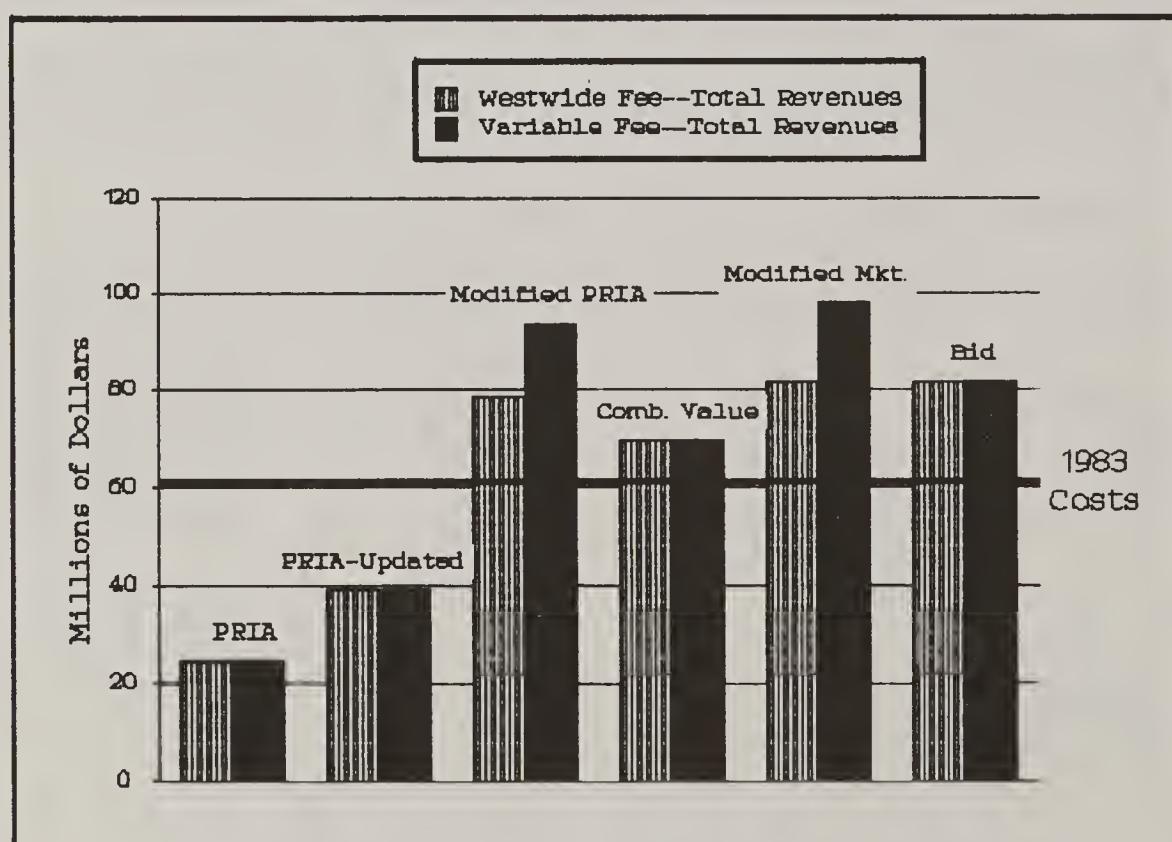
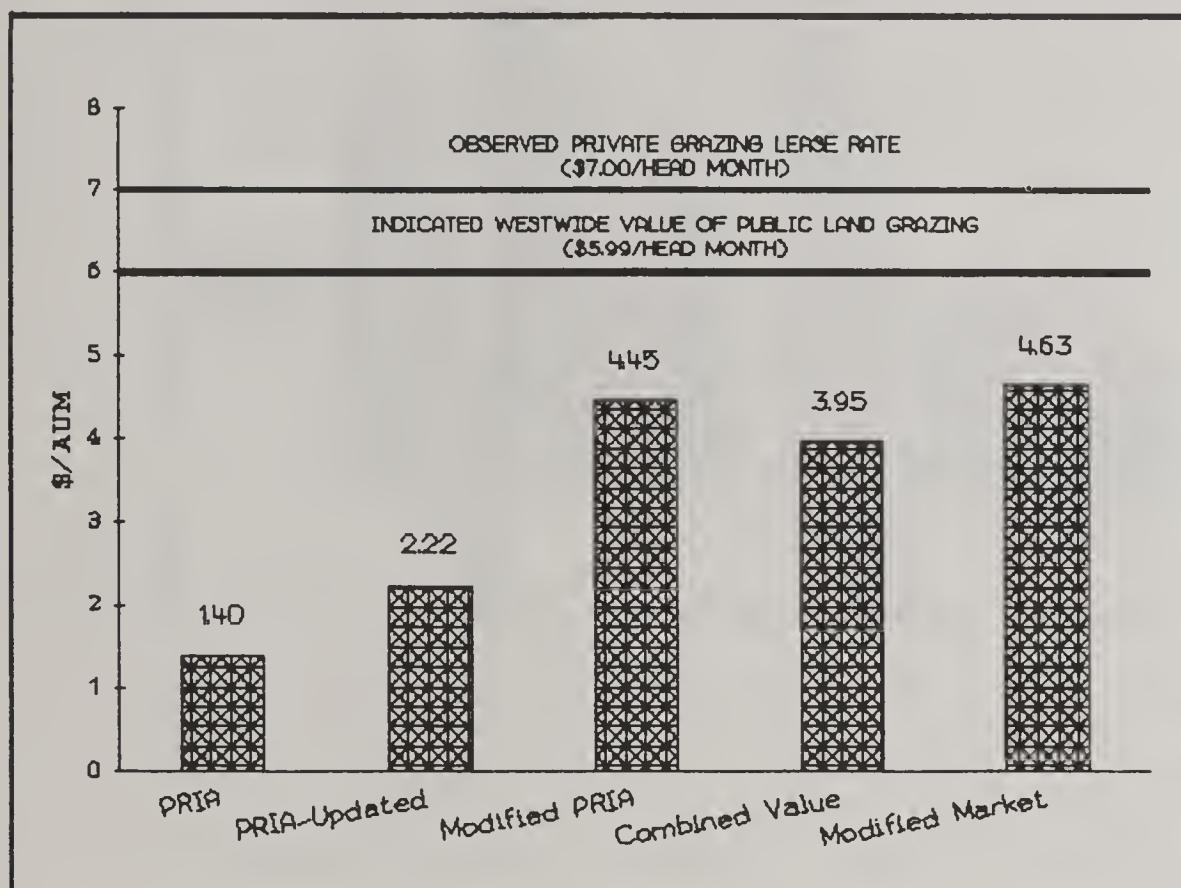


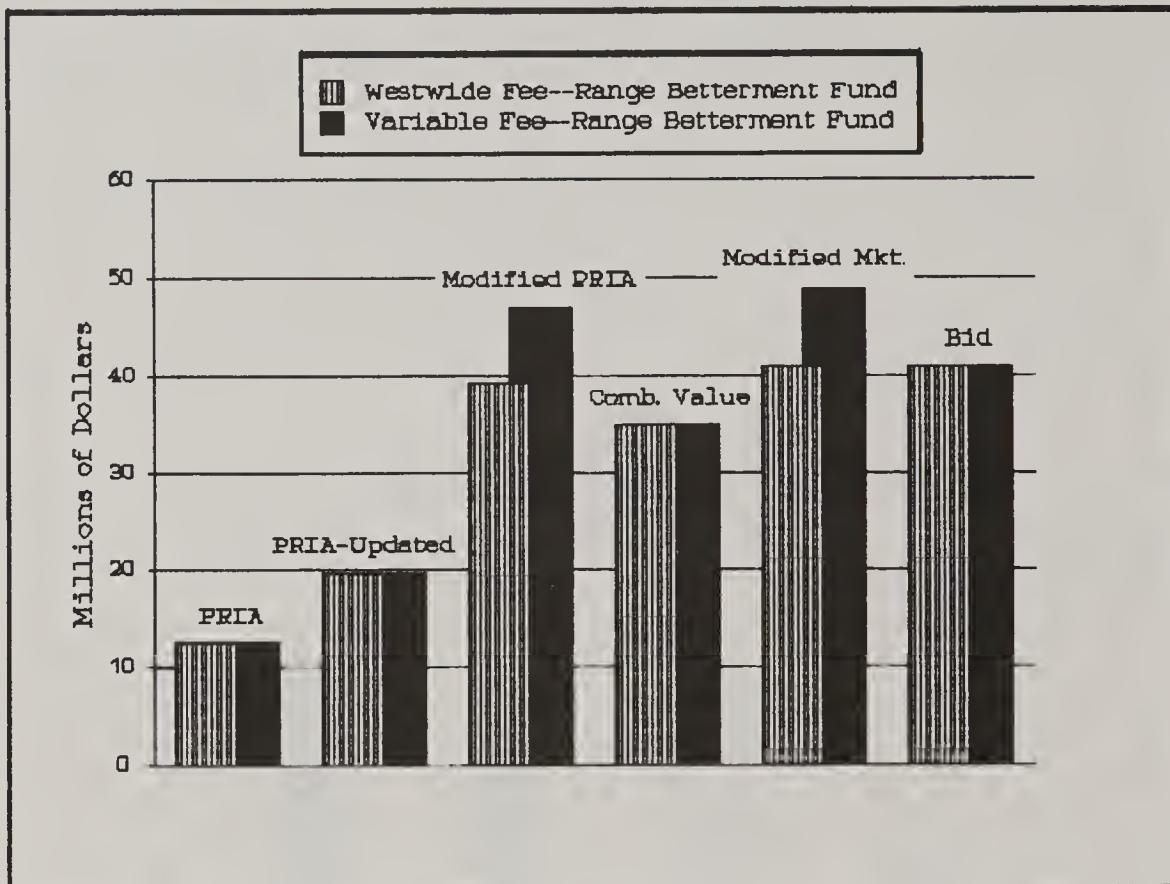
Figure 6.3 compares 1983 westwide grazing fee levels for each alternative fee system with the 1983 indicated westwide market value of \$5.99 per AUM for grazing on public rangelands (See Chapter 3, and Appendix 15, Vol. 2, Appraisal Report Estimating Fair Market Value of Grazing on Public Lands, 1984).

Figure 6.3: Alternative Grazing Fee Levels Compared to the Indicated Westwide Market Value of Grazing on Public Rangelands, 1983



Changes in grazing fees also affect the amount of public and private money available for range improvement projects. Funding for the Range Betterment Fund are directly proportional to changes in revenue as a result of the grazing fee. Changes in the Range Betterment Fund are displayed in Figure 6.4. Records show that permittee contributions totaled \$14 million from 1979 to 1983, or \$0.16 per AUM. As grazing fees increase, the amount of permittee contribution to range improvements is expected to decline.

Figure 6.4: Range Betterment Funds (50 Percent of the Grazing Fee Receipts)



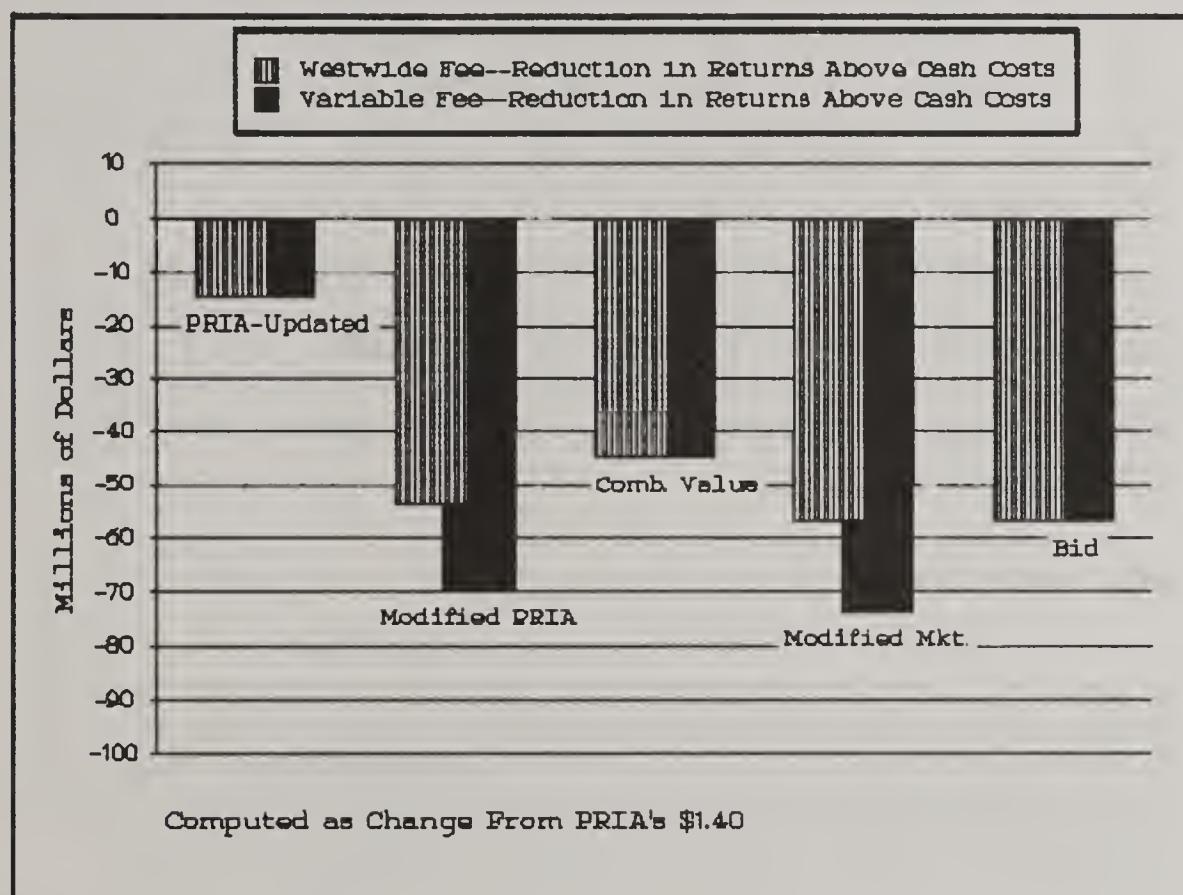
PERMITTEE IMPACTS

The Federal grazing fee should seek to avoid undue, adverse economic impacts to the permittee, and promote the stability of family ranching operations. Using the economic studies conducted by the ERS, economic impacts were computed from changes in grazing permittees net returns. Chapter 5 showed that the economic impact of changes in fees on individual permittees vary widely depending on size and economic efficiency of operation, degree of forage dependency, level of indebtedness, and extent of off-ranch employment and income.

Permittee impacts were computed as the change in the returns above cash costs. The change in returns above cash costs was computed for both the westwide and the variable fee applications. All reductions in permittee returns are computed as the change from the 1983 PRIA fee of \$1.40 per AUM. If the grazing fee was phased in gradually, the immediate impacts would be less than shown. The permittee loss in net returns is greater under variable as opposed to westwide fee applications. Permittee reductions, in the short-term, range from more than \$14.4 million under the PRIA-Updated Base Value alternative to more than \$70 million for the Modified Market Value alternative.

The changes in returns above cash costs, displayed in Figure 6.5, represent short-term losses. The economic effects chapter (Chapter 5) identified that the average permittee in each herd size class could pay additional fees in the short-term and still maintain a positive cash flow. When all costs were included, the impact analysis identified that the average permittee in all but two states could not pay higher grazing fees without incurring additional negative returns.

Figure 6.5: Changes in Permittee Returns Above Cash Costs, 1983 Fee Values



In the long-term economic conditions change. Thus, change in future livestock prices and costs of production would have a significant effect on the relative impact of any grazing fee changes. As indicated in the economic outlook section of the preceding chapter, the future situation with respect to these factors does not appear favorable. An adverse economic outlook indicates that fee increases would bring additional financial pressures on permittee ranchers, especially where all costs must be paid in the long-term.

The relative impact of grazing fee changes on permittee income in the future would depend upon the extent to which the grazing fee formula incorporates ability to pay factors such as livestock prices and cost of production. Except for the Modified Market Value and Competitive Bid alternatives, each of the other fee systems considered include an ability to pay component. As shown in Chapter 3, the PRIA formula tracks fluctuations in permittee returns,

which contribute to the economic stability of the permittees. The PRIA-Updated Base Value, the Modified PRIA, and the Combined Value fee formulas also track the relative economic position of the permittees and provide for economic stability.

Increased grazing fees would tend to reduce the capitalized asset value of ranches with grazing permits. This may decrease the appraised value of the permittee's ranch for sale or loan purposes. A large part of the difference between the value of the public forage and the fee collected has been capitalized into the value of the base ranch. This issue has become very complex, particularly regarding those permittees who have purchased grazing permits. Over the past 50 or more years many ranch properties have been transferred to new owners who have purchased the permit value. Permit holders in this situation have incorporated higher costs into their ranch operation by paying for the capitalized difference between the fee and grazing value in acquiring the base property.

Neither the FS nor the BLM recognizes capitalized value of permits as an entitlement attributable to public grazing use privileges. The courts, likewise, have not recognized permit value as an entitlement. Each of the alternative fee systems to the current PRIA have varying effects on permit value. The Competitive Bid alternative would eliminate most of the permit value and associated asset value.

EQUITY AMONG LIVESTOCK PRODUCERS

Another consideration in evaluating the Federal grazing fee is its impact on livestock producers who do not have access to public rangeland grazing allotments. Theoretically, to be equitable, the fee system should be neutral between the public rangeland permittees and nonpermittees. By definition, if costs for public rangeland permittees are lower than market value, the permittees will have an economic advantage over nonpermittees. These advantages may be reflected in higher profit margins, in lower overall prices, in an incentive to graze more livestock, or in the mix of AUM's grazed.

In 1982, there were about 386 thousand livestock producers in the 16 Western states, of which 27,000 (7 percent) were Federal grazing permittees. Figure 6.6 shows cash receipts, cash costs, and receipts less cash costs and replacement costs for the Federal permittee and the Western livestock industry. These data are for cow-calf livestock enterprises, and are derived through statistical survey and the development of livestock enterprise budgets by the USDA. In the Western livestock production subregions, costs are estimated for three size groups: less than 100 cows, 100 to 499 cows, and more than 500 cows. The data presented are weighted averages for both Federal permittees and Western industry producers.

Figure 6.6: Comparison of Cash Receipts, Costs, and Receipts Less Cash Costs For Federal Permittees and Western Livestock Industry Producers, 1982

	Federal Permittee Livestock Producer (Fee @ \$1.86) (\$/Cow)	Western Livestock Industry Producer (\$/Cow)	Net Difference (Permittee To Industry) (\$/Cow)	Ratio Of Federal Permittee To Industry
Cash Receipts	249.85	278.84	-28.99	0.896
Federal Fee	6.42			
Other Cash				
Costs	177.03			
Cash Costs	183.45	221.39	-37.94	0.829
Capital Replacement	31.82	24.53	7.29	1.297
Receipts less Cash Costs	66.41	57.45	8.96	1.156
Receipts less Cash Costs and Capital Replacement	34.59	32.92	1.67	1.051

Percent Federal Fees Are Of Cash Cost: 3.5

Source: USDA Economic Research Service, "The Economic Impact of Alternative Federal Grazing Fees on Western Livestock Businesses, 1984; Table 15 (corrected), Federal Permittee "Gee" Budgets and Tables D1-D3, Western Industry Livestock Enterprise Budgets (Cost of Production Survey-COPS)

The ERS ranch budget data show that in 1982, Federal grazing permittees in the Western states: (1) had cash receipts that were 10 percent lower than the industry producers, (2) had 17 percent lower cash costs than industry cattlemen; (3) encountered 30 percent higher replacement costs than the industry producers, and (4) realized receipts less cash costs that were 16 percent higher than the industry. When replacement costs are added to cash costs, residual receipts for permittees dropped to 5 percent higher than the industry.

The data in Figure 6.6, developed by ERS for permittees from the "Gee" ranch budgets and for the Western Industry producer from the COPS ranch budgets, reflects residual receipts in the short-term and is ". . . valid for comparison between permittees and nonpermittees. The difference in means [averages] shown for permittee's and the Western Livestock Industry's [receipts and costs] . . . are not statistically different. Computing the standard deviation on returns over cash receipts indicates a standard deviation of nearly \$20 per cow. Thus, a \$9 per cow difference is far less than two standard deviation normally used to test significance at 5 percent of confidence. This reconfirms the finding of . . . the 1966 Western Livestock Grazing Survey . . . that there is the existence of a large variation among

area, groups, or even regions that is as great as between those regions. We have valid means for comparison, but they are not statistically different, nor can the mean [average] be assumed as typical for the industry, because of wide dispersion in the data. The ranch budget data therefore represent a large, diverse population of Western States livestock producers (Crawford, 1986, USDA-ERS".)

ADMINISTRATIVE FEASIBILITY

Administrative feasibility requires that a grazing fee system be efficient and cost effective. Data costs should not be prohibitive and should not require extensive recurring data collection or computations that significantly increase the costs of administration. Cost of data for the current PRIA fee system, which is on an 11 Western States data base, is about \$50,000 per year or less than \$0.004 per AUM. Except for the Competitive Bid system, data costs would increase by about \$25,000 per year or \$0.005 per AUM. The Competitive Bid system could cost more than \$250,000 per year above the current PRIA.

A grazing fee system also should be readily understandable to FS and BLM field administrators, to the permittee ranchers, and to others with a direct interest in the public lands. A fee system should not require independent judgment decisions at diverse locations, and should be compatible with the permit system and other management needs.

Administration of any of the uniform westwide fee systems is straightforward, once agreement has been reached on the formula and the indexes to be used. A variable grazing fee system allows the Federal Government to tailor fees charged more closely to the specific economic circumstances for each region. A variable fee creates administrative complexities in determining the proper boundaries between fee regions. Almost inevitably, the exact boundaries are somewhat arbitrary. Permittees on one side of the boundary with higher fees will be unhappy about their relative fee disadvantage. As proposed, the Modified Market Value alternative fee system would have the additional difficulty of monitoring the type of livestock more closely. The Competitive Bid alternative would have significantly higher administrative costs. In addition to the Government cost, this alternative would involve additional costs to the permittees in preparing and submitting bids. Except for the Modified Market Value and the Competitive Bid alternatives, the other alternatives to the PRIA fee system are on a westwide basis. The Modified Market Value and Competitive Bid systems use price information and pricing areas delineated in the market value appraisal (Chapter 2). Implementation for these two alternatives could follow the pricing area boundaries to the extent they are administratively feasible. Administrative adjustments may be needed in order to have a uniform fee with each Agencies' field units (BLM Districts and National Forests). Appendix B, Figures B. 17 and B. 18, shows BLM and FS administrative units in relationship to pricing areas.

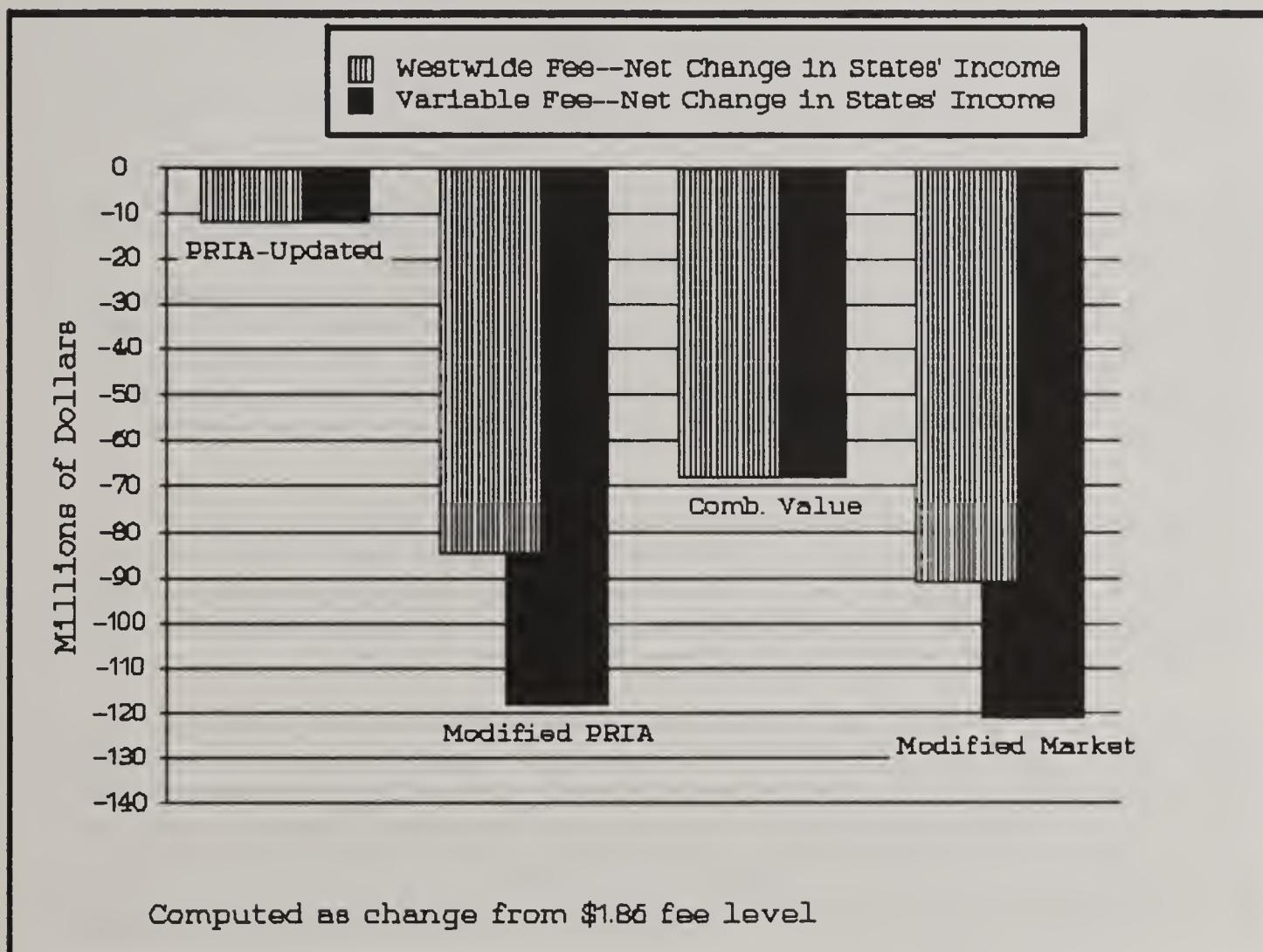
CONSIDERATION OF NONFEDERAL GOVERNMENT AND COMMUNITY INTERESTS

The grazing fee should consider the needs of dependent rural communities, affected State and local governments, and others having an interest in the public rangelands. Alternative fee effects on other governments and the public are influenced in part by the changes in State and county personal

income resulting from grazing fee changes and by changes in the level of Federal payments made to State and county governments.

Figure 6.7 summarizes changes in total personal income by grazing fee system alternative. The Modified Market Value Fee System, using a variable fee by pricing area, would have the greatest impact on the Western States total personal income. Total personal income would be reduced in excess of 120 million dollars. The changes displayed do not consider changes in distribution of Payments in Lieu of Taxes as a result of changes in the grazing fees.

Figure 6.7: Changes in State Personal Income as a Result of Changes in the Grazing Fee



CHAPTER 7. SUMMARY OF PUBLIC RESPONSE TO THE DRAFT GRAZING FEE REPORT

During the 30-day public comment period in April 1985, joint FS/BLM teams conducted briefings in 10 Western cities to provide information and solicit written response to the draft report. Only written response was accepted. Comments were taken through personal letters or preaddressed response forms which were included as part of the draft fee report. The preaddressed forms made commenting easier.

More than 7,000 respondents commented on the "1985 Grazing Fee Review and Evaluation Draft Report." Over 4,300 (60 percent) of all respondents identified themselves as members of the livestock industry; of those, 87 percent were permittees, 4 percent were permittee associations, and 9 percent were other ranchers. The majority of the permittees checked the line on the response form that said they were solely dependent on grazing.

Only about 400 nonpermittee livestock operators responded. Approximately half of these checked the nonpermittee line on the response form. The other half submitted form letters and personal letters and were placed in the nonpermittee category for one of two reasons: (1) either they stated they were nonpermittees, or (2) they were obviously associated with the livestock business but were not clearly permittees. Of the States with traditionally more private versus public rangeland grazing (Nebraska, Oklahoma, Kansas, North Dakota, and Texas and the Eastern States), only nine nonpermittees responded.

The second largest group of respondents, over 2,600, was made up of individuals; those who checked the "individual" line on the response forms, those who did not express a particular affiliation, and other individuals who were affiliated with neither the Government nor the livestock industry (i.e., University economists or relatives of permittees).

Leading the States with the most responses were Arizona and Nevada, each with more than 1,000 respondents. The majority of the Nevada responses were form letters. Utah, New Mexico, and Colorado had more than 500 respondents each. The majority of Idaho's nearly 500 responses were personal letters. States with less than 100 respondents were Kansas, North Dakota, Oklahoma, and Washington. Nebraska, one of the 16 Western States that falls under PRIA, had no respondents. Fewer than 100 respondents were from outside the Western States or were of unknown origin.

"State Government" includes both elected State officials and State agencies. All Western State Governments except Kansas, Oklahoma, and Nebraska responded during the comment period. Respondents identifying themselves as conservation group representatives numbered 61, with 13 from California and 5 or more each from Utah, Colorado, and Arizona.

Figure 7.1 shows the number of respondents in each of the three main categories: Livestock (permittees, permittee organizations, and nonpermittees), Government (Federal, State, and local elected officials and agencies), and Other (other individuals and groups).

Figure 7.1: Respondents by Type, Public Response to the Draft Grazing Fee Report, 1985

RESPONDENT TYPES BY STATE				
STATE	LIVESTOCK	GOVERNMENT	OTHER	TOTAL
Arizona	430	10	980	1420
California	231	7	79	317
Colorado	491	14	177	682
Idaho	301	14	154	469
Kansas	0	0	1	1
Montana	448	6	181	635
Nebraska	0	0	0	0
Nevada	772	16	237	1025
New Mexico	424	11	369	804
North Dakota	27	1	9	37
Oklahoma	0	0	1	1
Oregon	265	3	74	342
South Dakota	93	2	15	110
Utah	641	18	232	891
Washington	29	2	14	45
Wyoming	196	4	71	271
Other	33	0	53	86
TOTAL	4381	108	2647	7136

Personal letters made up about half of the total responses. Form letters, defined in this analysis as duplicates of letters submitted by 3 or more individuals, made up about 40 percent of the total responses.

About 80 percent of all respondents supported Alternative 1, retaining the present PRIA formula. About 9 percent of all respondents did not indicate a preference for any alternatives. Alternative 1 was the only alternative favored by each respondent group except the conservation group representatives. All other alternatives received more negative than positive comments overall, by group and by State. Four out of five respondents preferred a westwide grazing fee system.

Most respondents who commented on the appraisal (mostly those in the livestock industry) did not like or did not agree with it. Reasons ranged from invalid statistical and procedural methods to data not being considered or the "wrong" data being used. Many ranchers used the appraisal as a reason to discredit the fee options, including Alternative 4, which was not based on the appraisal. A minority of respondents favored the concept of fair market value, but did not suggest a specific alternative [fee system]. The respondents who identified themselves as [public rangeland] members of the livestock industry said that any increase in grazing fees would be disastrous.

REPORT DEVELOPMENT

A joint FS and BLM committee, in conjunction with the PRIA, was assigned to study the grazing fee situation on public rangelands and to develop for the Secretaries of Agriculture and the Interior the fee review and evaluation technical report . The committee for the final fee report was:

Technical staff:

Co-chairmen:

Robert M. Williamson, Director of Range Management
USDA-Forest Service

Billy R. Templeton, Chief, Division of Rangeland Resources
USDI-Bureau of Land Management

Members:

Edward R. Frandsen, USDA-Forest Service
Glen E. Hetzel, USDA-Forest Service
James H. O'Connor, USDI-Bureau Of Land Management
Donald D. Waite, USDI-Bureau of Land Management
Judy E. Nelson, USDI-Bureau of Land Management

Consultants:

Dr. Gregory S. Alward, USDA-Forest Service
Russell D. Boe, USDA-Economic Research Service
Dr. Terry L. Crawford, USDA-Economic Research Service
Dr. John Fedkiw, Department of Agriculture
Dr. Alan Fox, USDA-Forest Service
Dr. C. Kerry Gee, USDA-Economic Research Service
Terry L. Grindstaff, Office of Management and Budget
Howard Holden, USDA-Statistical Reporting Service
Douglas W. MacCleery, Department of Agriculture
Dr. Robert Nelson, Department of the Interior
Donald Pearson, Office of Management and Budget
Henry R. Smith, Department of the Interior
Fred Thorp, USDA-Statistical Reporting Service

APPENDIX

DERIVATION OF UPDATED 1966 BASE VALUE
for the
PRIA-UPDATED BASE VALUE FEE SYSTEM ALTERNATIVE

The PRIA-Updated Base Value fee formula uses a base value derived by indexing private lease rate and cost data from the 1966 Western Livestock Grazing Survey (WLGS). The 1966 WLGS established a base value of \$1.23 per AUM.

Comparison of the cost of grazing on private land (including lease rate) with the cost of grazing on public land (excluding the grazing fee) showed an overall difference of \$1.60 per Animal Unit Month (AUM) for cattle. But, the average lease was smaller, in terms of AUM's, than the average public grazing permit. The range in size of leases and permits was about the same. When the cost data for private land were adjusted to the distribution of AUM's by season of use and size of permit on public land, the difference dropped to \$1.26 per AUM. The overall difference for sheep was \$1.15 per AUM. After adjustment for season of use and size, it was \$1.13 per AUM. The weighted average for cattle (80 percent) and sheep (20 percent) was \$1.23 per AUM.

The weighted average for the private land lease rate was \$1.78 per AUM. Thus, the \$1.23 was a 31 percent downward adjustment for the average difference between public and private land for such factors as landlord services and level of investment. The public and private lands had the same general range of difference in these factors, but since the average was different, an adjustment was required.

Figure 1 shows the updating of the 1966 WLGS private grazing land lease rate of \$1.78 per AUM to \$3.84 per AUM. The updated (1980-1984 base) private land lease rate of \$3.84 is derived by multiplying the 1966 WLGS value of \$1.78 by the Forage Value Index (FVI) of 216. The 216 FVI is derived by dividing the USDA Statistical Reporting Service (SRS) weighted average 1964-1968 June Enumerative Survey of Private Land Lease Rate of \$3.48 per AUM by the (1980-1984) weighted average lease rate of \$7.50 per AUM. Both of these private land lease rates are weighted by the 16 Western States public land AUM's.

Figure 1: 1983 Updated Private Grazing Land Lease Rate.

WLGS 1966 Private Grazing Lease Rate = \$1.78/AUM

Weighted average for 16 States: 1964-1968 = \$3.48/AUM

1980-1984 = \$7.50/AUM

Forage Value Index = \$7.50 divided by \$3.48 = 2.16 x 100 = 216

Updated 1966 private lease rate = \$1.78/AUM x 216 = \$3.84/AUM

Figure 2 shows the updating of the 1966 nonfee cost difference to the 1980-1984 base period. The updated (1980-1984) nonfee cost difference of \$1.50 per AUM is derived by multiplying the nonfee cost difference for sheep and cattle by the 1980-1984 Input Cost Index (ICI) of 273.

Figure 2: Updated 1966 Nonfee Differential Costs.

	Cattle		Sheep	
	Public	Private	Public	Private
Total Nonfee Costs	\$3.28	\$2.78	\$4.53	\$3.89
Input Cost Index 1/	x 273	x 273	x 273	x 273
	\$8.95	\$7.51	\$12.37	\$10.62
Cost Difference	\$1.44		\$1.77	
	x .80		x .20	
	\$1.15		\$.35	

Cattle and sheep nonfee costs weighted difference = \$1.50 (\$1.15 + .35)

1/ Input Cost Index is the average index for the base years 1980-1984.

Derived Base Value: The 1980-1984 updated value of \$2.34 per AUM is derived by subtracting the updated (1980-1984) nonfee cost of \$1.50 per AUM from the updated (1980-1984) private lease rate of \$3.84 per AUM.

**DERIVATION OF BASE VALUE
for the
COMBINED VALUE FEE SYSTEM**

Indicators of 16 Western States private grazing lease rates were documented by the FS and BLM appraisers in a supplemental report. For details of the market analysis see: Appraisal Report Estimating FAIR MARKET RENTAL VALUE OF GRAZING PUBLIC LANDS, U.S. Forest Service and Bureau of Land Management, Vol. 2, Appendix 15, page 15-6, Oct. 1983. Figure 1 shows the 1983 findings:

Figure 1: Indicated 1983 Westwide Market Value

Year	Private Land Lease Rate	Adjustment	Indication of Value of Grazing on Public Rangelands	Payment In Advance
1983	\$7.00 **	x .95	\$6.65	\$5.99

The average price observed by the market analysis for 1983 was \$7.35. The average over the 7-year period was \$6.87. Placing the most weight on the averages of the past 3 or 4 years would indicate a private land lease rate of about \$7.00 for 1983. The 6-year average price (excluding 1977) is \$7.20.

Derivation of the base value for the Combined Value Alternative Fee System is the arithmetic (mean) average of the indicated value of grazing on public rangelands (\$5.99 per AUM) and the updated 1966 base value (\$2.34 per AUM). Based on economic theory, the two values should be the same, but they differ for a variety of reasons, including differences in methodology, data collection and sampling techniques, statistical analysis of the data, and structural cost changes over time. The true economic base value for the alternative fee system is probably somewhere between the two extremes. For illustration purposes an average value is computed as shown in Figure 2.

Figure 2: Derived Base Value for Combined Value Fee System.

---Item---	---Values---
Grazing Rental Appraisal of Public Rangeland Grazing:	\$5.99/AUM
Updated 1966 WLGS Residual Value: Total Value:	$\frac{\$2.34/\text{AUM}}{\$8.33/\text{AUM}}$
Derived Base Value	$\$8.33 / 2 = \$4.16/\text{AUM}$

APPENDIX B

Figure B.1: BLM Public Lands in the Western United States



Figure B.2 Forest Service Lands in the Western United States

Public Rangelands Managed by the Forest Service, U.S. Department of Agriculture

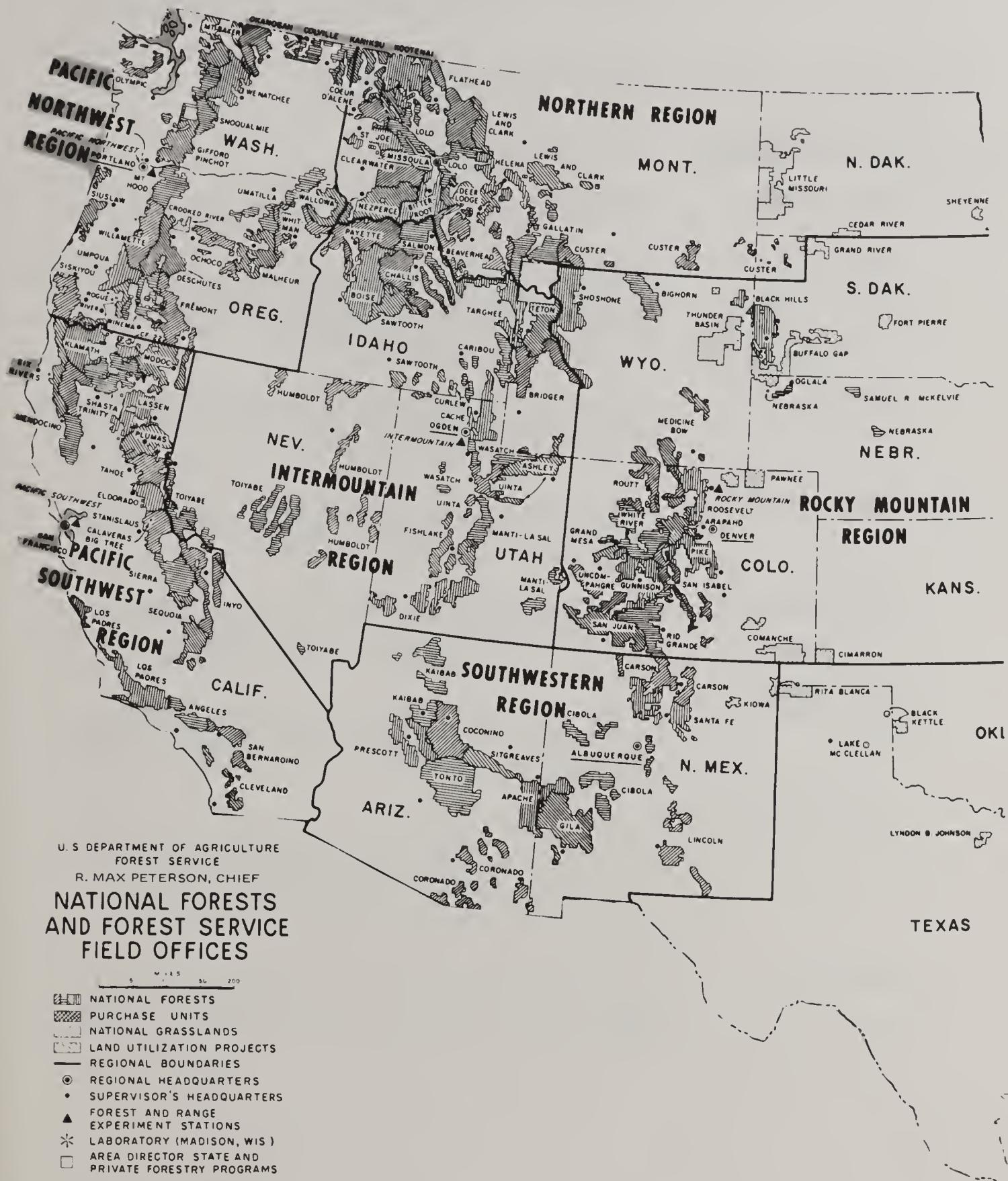


Figure B.3 Information on Purchasing Grazing Fee Study Background Studies

Studies Available Through National Technical Information Service (NTIS):

The grazing fee study background documents listed below may be ordered from:

U.S. Department of Commerce
National Technical Information Service
Springfield, Virginia 22161

Rush Service: 800-336-4700
Information: 703-487-4660

<u>Accession Number</u>	<u>Title, Author</u>
PB85-128-296	<u>Evaluation of the Forage Value Index, USDI, Bureau of Land Management, 1984 (\$16.00)</u>
PB85-128-304	<u>Potential Impacts on Local Income and Employment of a Change in the Federal Grazing Fee (Case Studies of 13 Areas in the West), USDA, Economic Research Service, 1984 (\$11.50)</u>
PB85-128-312	<u>The Impact of Alternative Federal Grazing Fees on Western Livestock Businesses, USDA, Economic Research Service, 1984 (\$13.00)</u>
PB85-128-320	<u>A Theoretical Evaluation of the Fee Systems for Private Grazing on Federal Lands, USDA, Economic Research Service, 1984 (\$14.50)</u>
PB85-128-338	<u>Estimated Impacts of Income and Employment in 13 Western States of Changes in the Federal Grazing Fee, USDA, Forest Service, 1984 (\$14.50)</u>
PB85-128-346	<u>An Evaluation of the Beef Cattle Prices and Prices Paid Indexes Used in the Federal Grazing Fee Formula, USDA, Statistical Reporting Service, 1984 (\$10.00)</u>
PB83-237-248	<u>Grazing Lease and Fee Arrangements of Western Governments and Agencies--a Study of Western State, Local Governments, and other Federal Agencies Grazing Lease Arrangements and User Charges, Colorado State University, 1983 (\$23.50)</u>
PB84-242-205	<u>Fair Market Rental Value of Grazing on Public Lands, USDI, Bureau of Land Management, and USDA, Forest Service, 1984 (\$61.50)</u>

Figure B.3 continued

The appraisal data base may also be ordered from the NTIS on computer tape or microfiche. The computer data base is supplied complete with a copy of the appraisal. Buyers of the microfiche should be warned that a copy of the appraisal report is necessary in order to use the microfiche reports. Costs and accession numbers follow.

<u>Accession Number</u>	<u>Description</u>
PB84-237-262	Computer tape and appraisal report. The computer tapes can be obtained in different densities and formats to accommodate use on different tape drives. Information can be obtained by calling Clara Cannon at (703) 487-4929 (\$240.00 to \$332.00)
PB84-242-213	Microfiche data base for all States (\$40.00)
PB84-242-221	Microfiche data base for Arizona (\$4.50)
PB84-242-239	Microfiche data base for California (\$7.50)
PB84-242-247	Microfiche data base for Colorado (\$8.00)
PB84-242-254	Microfiche data base for Idaho (\$8.00)
PB84-242-262	Microfiche data base for Kansas (\$4.50)
PB84-242-270	Microfiche data base for Montana (\$8.00)
PB84-242-288	Microfiche data base for Nebraska (\$4.50)
PB84-242-296	Microfiche data base for Nevada (\$4.50)
PB84-242-304	Microfiche data base for New Mexico (\$4.50)
PB84-242-312	Microfiche data base for North Dakota (\$4.50)
PB84-242-320	Microfiche data base for Oklahoma (\$4.50)
PB84-242-338	Microfiche data base for Oregon (\$4.75)
PB84-242-346	Microfiche data base for South Dakota (\$4.50)
PB84-242-353	Microfiche data base for Texas (\$4.50)
PB84-242-361	Microfiche data base for Utah (\$4.50)
PB84-242-379	Microfiche data base for Washington (\$4.50)
PB84-242-387	Microfiche data base for Wyoming (\$5.25)

Figure B.3 continued

In addition to the above studies available through NTIS, the following special study may be ordered from Oregon State University:

Costs Incurred by Permittees in Grazing Livestock on Public Lands in Various Western States (EM 8283), Obermiller, Frederick W., and David K. Lambert, Oregon State University Extension Service, Oregon State University, Corvallis, Oregon (\$3.00)

Figure B.4 Historical Summary of Grazing Fee Events

Year	Events
1897	First regulated use of Forest Reserves.
1906	First Forest Service fees were imposed on ranchers and settlers accustomed to free and unrestricted use.
1920	House Committee on Agriculture tried to get fees increased up to 300 percent (Forest Service opposed this attempt).
1920	Comprehensive Rachford study of 1920-24 was conducted to provide a basis for fair and justifiable fee.
1925	New fees from Rachford study was deferred because of objections from stockmen.
1928	New fees were put into effect to escalate to set levels in 4 years.
1933	Fees were reduced because of economic conditions.
1934	Taylor Grazing Act established control over grazing on the public domain and directed that reasonable fees would be charged.
1941	Saunderson (Forest Service) and Leech (Grazing Service) completed the range appraisal study on commercial grazing lease costs of an animal unit month of feed.
1941 to 1946	Congressional committees were in disagreement over grazing fees; House Subcommittee on Interior Appropriations deemed the fees too low and the Senate Subcommittee on Public Lands and Survey questioned the need to increase fees.
1942	Proposed grazing fee increase deferred because of the war, no increase during the duration.
1946	The Nicholson Report, November 12, 1946, recommended that grazing fees be based on administrative costs.
1952	Independent Agencies Appropriations Act called for user fees to be self-sustaining, uniform, and fair and equitable to the public and user.
1959	Bureau of Budget Circular A-25, called for fair market value.
1966	Western Livestock Grazing Survey to determine grazing costs and values.
1969	New fees system was implemented after review by industry, conservation, and farm groups. First of 10 incremental adjustments applied to reach FMV by 1978.

Figure B.4 continued

Year	Events
1969	Hearings on grazing fees were held by Public Lands Subcommittee of Senate and House Committees on Interior and Insular Affairs.
1969	The Secretaries of Agriculture and Interior were defendants in a New Mexico class action suit (Pankey vs. Freeman) and the Secretary of the Interior in Utah (Broadbent vs. Hickel) seeking injunctive relief against the 1969 grazing fee regulations and alleging the Secretaries acted illegally in failing to take capital investment into consideration.
1970	Moratorium on scheduled increases.
1971	Second of 10 incremental adjustments applied.
1972	Fees limited to a 3 percent increase over 1971.
1973	Third of 10 incremental adjustments applied, FMV to be reached by 1980.
1974	Fourth of 10 incremental adjustments applied.
1975	Moratorium on scheduled increase. The President said the schedule will be maintained to reach FMV by 1980.
1976	Scheduled adjustment applied. The Federal Land Policy and Management Act was signed on October 21; Section 401(a) directed that there would be no grazing fee increase in 1977 and also directed the Secretaries of Agriculture and the Interior to conduct a grazing fee study.
1977	Moratorium on scheduled increase. Report of Secretaries on grazing fees submitted to Congress on October 21, 1977.
1978	Public Rangelands Improvement Act (PRIA) of 1978 established a cost of production/ability to pay grazing fee formula for the 7-year period 1979-85. Report to be made to the Congress no later than December 1985.
1985	Report of the Forest Service and BLM on PRIA fee system and other optional fee systems to the Secretaries of Agriculture and the Interior for their 1985 report to Congress.

Figure B.4 continued

Year	Grazing Fee	Basis of Grazing Fee	
<u>Bureau of Land Management</u>			
1935	No fee		
1936-1946	\$0.05	Cost of administration	
1947-1950	\$0.08	Nicholson Report	
1951-1954	\$0.12	Reasonable fee	
1955-1957	\$0.15	Reasonable fee	
1958	\$0.19	100 percent of livestock price formula	
1959-1960	\$0.22	100 percent of livestock price formula	
1961-1962	\$0.19	100 percent of livestock price formula	
1963-1965	\$0.30	150 percent of livestock price formula	
1966-1968	\$0.33	150 percent of livestock price formula	
<u>Forest Service</u> (Average Fee*)			
	Cattle	Sheep	
1906-1916	\$0.06	\$0.02	Reasonable fee
1917-1927	\$0.13	\$0.04	Rental value of private range
1928-1931	\$0.13	\$0.04	Rachford Appraisal
1932-1935	\$0.08	\$0.02	Appraisal adjusted by livestock prices
1936-1944	\$0.17	\$0.04	Appraisal adjusted by livestock prices
1945-1954	\$0.42	\$0.10	Appraisal adjusted by livestock prices
1955-1964	\$0.43	\$0.16	Appraisal adjusted by livestock prices
1965-1968	\$0.52	\$0.11	Appraisal adjusted by livestock prices
Forest Service (FS) and Bureau of Land Management (BLM)			
	FS*	BLM	
1969	\$0.60	\$0.44	1969 Fair Market Value Formula**
1970	\$0.60	\$0.44	Moratorium
1971	\$0.78	\$0.64	
1972	\$0.80	\$0.66	Fee limited to 3% increase
1973	\$0.91	\$0.78	
1974	\$1.11	\$1.00	
1975	\$1.11	\$1.00	Moratorium
1976	\$1.60	\$1.51	
1977	\$1.60	\$1.51	Moratorium
1978	\$1.60	\$1.51	PRIA Fee Formula
1979	\$1.93	\$1.89	
1980	\$2.41	\$2.36	
1981	\$2.31		(1st year both agencies had same fee)
1982	\$1.86		
1983	\$1.40		
1984	\$1.37		
1985	\$1.35		

*Forest Service areas had different base value, number represents the average value charged for the years shown.

**1969 Fee formula was uniform, each agency was to reach the fair market value in 10 years through the addition of ten annual increments (FS = \$0.072, BLM = \$0.09).

Figure B.5 Summary of Vacant Allotment Information, Forest Service and BLM

Office	# Allot	AUM's	Acres	Number of Allotments	
				Cattle	Sheep
Bureau of Land Management					
Arizona	1	0	10,099	1	0
California	3	424	6,241	1	0
Colorado	42	3,999	62,832	36	7
Idaho	7	5,328	72,143	6	1
Montana	78	2,229	49,084	78	0
Nevada	9	53,556	955,926	7	2
New Mexico	27	1,696	32,559	27	0
Oregon	15	516	15,665	15	0
Utah	18	5,153	154,351	14	4
Washington	14	623	5,215	14	0
Wyoming	20	8,994	52,709	16	4
Total Vacant	236	82,518	1,417,449	217	19
BLM Total	20,172	10,657,271	175,063,938	18,128	1,856
Vacancy Rate	1%	0%	1%	1%	1%
Forest Service					
Arizona	2	3,485	86,527	2	0
California	37	12,025	173,058	27	10
Colorado	38	21,095	503,702	14	24
Idaho	29	17,817	199,934	1	28
Montana	4	1,329	47,833	3	0
New Mexico	11	19,678	170,930	11	
Oregon	9	6,192	190,250	4	5
Utah	4	4,643	88,395	0	4
Washington	5	2,572	77,907	2	3
Wyoming	34	11,323	271,023	7	27
Total Vacant	175	101,150	1,614,255	74	99
FS Total	13,089	9,760,968	99,829,149	7,474	1,613
Vacancy Rate	2%	1%	2%	1%	8%
Vacant BLM/FS	411	182,668	3,031,704	291	118
Total BLM/FS	33,261	20,418,239	274,893,087	25,602	3,469
Vacancy Rate	1%	1%	1%	1%	4%

Drs. Bruce Godfrey and Darwin Nielsen, Utah State University, Logan, Utah

Figure B-6 Number of Public Land AUM's by State

State	Forest Service		Bureau of Land Management		Total	
	FS-AUM's	FS-AM's*	Sec. 15	Sec. 3	BLM-Total	BLM/FS
----- 1982 -----						
Arizona	1,396,981	1,164,151	155,592	545,035	700,627	
California	601,806	501,505	243,502	289,103	532,605	
Colorado	960,300	800,250	53,694	600,490	654,184	
Idaho	933,274	777,728	40,317	1,450,949	1,491,266	
Kansas			244		244	
Montana	666,241	555,201	168,157	1,075,103	1,243,260	
Nebraska	102,665	85,554	1,257		1,257	
Nevada	356,501	297,084	49,787	2,358,912	2,408,699	
New Mexico	950,010	791,675	283,370	1,584,716	1,868,086	
North Dakota			9,718		9,718	
Oklahoma	6,035	5,029	475		475	
Oregon	574,137	478,448	57,036	1,072,177	1,129,213	
South Dakota	128,989	107,491	74,563		74,563	
Utah	719,967	599,973		1,334,573	1,334,573	
Washington	129,415	107,846	30,155		30,155	
Wyoming	621,022	517,518	463,593	1,561,083	2,024,676	
National Grasslands	1,451,461	1,209,551				
Total	9,598,804	7,999,003	1,631,460	11,871,841	13,503,301	21,502,304
----- 1983 -----						
Arizona	1,488,319	1,240,266	155,592	548,646	704,238	
California	630,747	525,623	243,502	236,626	480,128	
Colorado	946,167	788,473	53,694	615,982	669,676	
Idaho	943,870	786,558	40,317	1,366,077	1,406,394	
Kansas			244		244	
Montana	664,548	553,790	168,157	1,061,429	1,229,586	
Nebraska	99,960	83,300	1,257		1,257	
Nevada	351,723	293,103	49,787	2,100,150	2,149,937	
New Mexico	954,539	795,449	283,370	1,540,757	1,824,127	
North Dakota			9,718		9,718	
Oklahoma	6,663	5,553	475		475	
Oregon	568,801	474,001	57,036	1,099,155	1,156,191	
South Dakota	133,095	110,913	74,563		74,563	
Utah	750,990	625,825		1,242,183	1,242,183	
Washington	135,442	112,868	30,155		30,155	
Wyoming	620,188	516,823	463,593	1,662,754	2,126,347	
National Grasslands	1,468,767	1,223,896				
Total	9,763,727	8,136,439	1,631,460	11,473,759	13,105,219	21,241,658

*Forest Service AUM's are converted to a unit that is similar to BLM AUM's by dividing by 1.2

**Figure B.7 Forest Service Maintenance Expenditures by Permittees,
by Region, 1979-1983**

Maintenance Expenditures, Total Dollars

Region	1979	1980	1981	1982	1983	1979-1983
1	255,501	231,690	173,725	166,630	173,911	1,001,457
2	348,750	543,650	432,259	521,747	467,683	2,314,089
3	490,501	236,979	176,219	830,432	997,176	2,731,307
4	869,945	620,971	600,877	747,260	750,031	3,589,084
5	257,218	337,472	202,608	245,514	209,439	1,252,251
6	<u>261,378</u>	<u>174,888</u>	<u>254,447</u>	<u>225,095</u>	<u>269,281</u>	<u>1,185,089</u>
Total	2,483,293	2,145,650	1,840,135	2,736,678	2,867,521	12,073,277

Authorized AUMS*

Region	1979	1980	1981	1982	1983	1979-1983
1	1,145,118	1,173,446	1,159,773	1,164,015	1,158,521	5,800,872
2	1,846,487	1,797,147	1,804,864	1,809,678	1,825,118	9,083,294
3	2,008,718	1,940,898	1,974,503	2,022,959	2,109,381	10,056,459
4	1,866,207	1,922,390	1,930,210	1,906,524	1,925,946	9,551,277
5	450,178	453,191	441,713	472,718	496,927	2,314,727
6	602,461	599,338	625,216	621,301	618,248	3,066,563
Total	7,919,167	7,886,410	7,936,279	7,997,196	8,134,140	39,873,192

Maintenance Dollars per AUM

Region	1979	1980	1981	1982	1983	1979-1983
1	0.22	0.20	0.15	0.14	0.15	0.17
2	0.19	0.30	0.24	0.29	0.26	0.25
3	0.24	0.12	0.09	0.41	0.47	0.27
4	0.47	0.32	0.31	0.39	0.39	0.38
5	0.57	0.74	0.46	0.52	0.42	0.54
6	0.43	0.29	0.41	0.36	0.44	0.39
Average	0.31	0.27	0.23	0.34	0.35	0.30

* Forest Service AUM's converted to AM (similar to BLM's AUM) by dividing by 1.2

Figure B.8 Differences Between Private Leased and Public Grazing Lands

PRIVATE GRAZING AGREEMENTS	PUBLIC RANGELAND PERMITS/LEASES
<u>FORM</u>	
Typically oral "handshake" agreements.	Written leases/permits
<u>TENURE</u>	
Typically 1-year but renewed year after year unless there is a specific cause for nonrenewal. Typical renewal procedure may be as simple as a Christmas card note, accompanied by a check for the following year's lease period.	10 year leases/permits. Renewed upon written application and acceptance of any specific changes in terms and conditions.
<u>TERMS AND CONDITIONS</u>	
Typically no written documentation. General understanding between the parties that property is not to be abused and returned at the end of term of use in at least as good shape as received. If lessee fails to maintain the condition of the property, the agreement will be terminated or not renewed. No established process for handling disagreements other than the civil courts.	Detailed general terms and conditions contained in published regulations plus specific stipulations for the individual leases/permits. May be held for cancellation for specific cause with rights of appeal to higher administrative bodies with the burden of proof on the agency.
<u>PAYMENT SCHEDULES</u>	
The private agreements show a fairly even mix of payments at the beginning of the use period with various combinations of partial advance, periodic, and end of the season payments.	Generally the permits/leases provide for full payment in advance. There are, however, many situations in which split billings and payment at the end of the grazing season are employed.
<u>SEASONS AND PERIODS OF USE</u>	
The parties to the transactions have a general understanding as to when and for how long the lands are to be used for grazing, but actual use periods are more or less dictated by prevailing local weather conditions. These generally allow for a certain amount of flexibility in turn out and roundup dates.	The permits/leases provide fairly strict periods and dates of use, based on history of local weather conditions. They allow only a minimum amount of flexibility in adjusting turn out and roundup dates.

Figure B.8 continued

PRIVATE GRAZING AGREEMENTS	PUBLIC RANGELAND PERMITS/LEASES
<u>NONUSE</u>	
In general, lessees in private agreements pay the agreed price whether they graze their livestock or not. Failure to pay would result in the loss of the right to use the property in future years. Someone else would normally use the land for that season and probably for subsequent years as well.	Pertinent agency regulations allow permittees/lessees to take nonuse, whereby he/she retains their grazing privileges and do not have to pay the fees for the specified grazing period. Nonuse is granted for up to 3 consecutive years, and with justification may exceed 3 years.
<u>PENALTIES FOR EXTRA ANIMALS</u>	
Typically, lessees are required to pay the agreed price for all animals grazed, but there is normally no penalty such as increased rates for grazing more animals than agreed on.	Agency regulations provide for penalties in the form of increased rates plus possible reductions in use or total loss of privileges for repeated offenses or in extreme circumstances. They would have the right of appeal on any such actions.
<u>REFUNDS FOR FEWER ANIMALS</u>	
Normally, lessees in private agreements do not receive refunds in cases where they run fewer animals than planned. There are exceptions, cases of severe drought, fire, and other natural "disaster" situations.	Agency regulations contain provisions which allow for refunds for most situations in which the permittee/lessee runs fewer animals than were covered by billings and payments.
<u>CONSTRUCTION OF IMPROVEMENTS</u>	
Routine structural range improvements (for example drift fences) are generally done by the lessee, in some cases with materials provided by the landowner. The landowner bears a substantial part of the cost of major range improvements (i.e., water developments), either directly or through reductions in rent until the construction has been completed. Revegetation is typically handled by the landowner or credited if done by the lessee. In all cases, range improvements of a permanent nature are done with the landowner's consent and with prior agreement that ownership rests with the landowner upon completion.	Improvements on permits/leases can be done in a variety of ways, by the permittee/lessee, with materials being furnished by the agency; by the agency with contract or force account crews; or by the agency with contributed funds from the permittee/lessee and third parties such as wildlife agencies, advisory boards, etc. Permittee/lessee retains interests in these improvements, but in most cases title to improvements rest with the government.

Figure B.9 Summary of Public and Private Costs Per Animal Unit Month
for Grazing in the Western States, 1966

Cost Items	-----Cattle-----		-----Sheep-----	
	Public Costs	Private Costs	Public Costs	Private Costs
Lost animals	\$0.60	\$0.37	\$0.70	\$0.65
Association fee	0.08	0.04	0.11
Veterinary	0.11	0.13	0.11	0.11
Moving livestock to and from	0.24	0.25	0.42	0.38
Herding	0.46	0.19	1.33	1.16
Salt and Feed	0.56	0.83	0.55	0.45
Travel to and from	0.32	0.25	0.49	0.43
Water	0.08	0.06	0.15	0.16
Horse	0.16	0.10	0.16	0.07
Fence maintenance	0.24	0.25	0.09	0.15
Water maintenance	0.19	0.15	0.11	0.09
Development depreciation	0.11	0.03	0.09	0.02
Other costs	<u>0.13</u>	<u>0.14</u>	<u>0.29</u>	<u>0.22</u>
Total nonfee costs	3.28	2.75	4.53	3.89
Private lease rate (1966)	(1.26)	1.79	(1.13)	1.77
Total Costs	4.54	4.54	5.66	5.66
Difference between total private/public fee and nonfee costs		\$1.26		\$1.13
Combined cattle and sheep (weighted average; cattle 80%, sheep 20%)			\$1.23	

Note: These were data developed by the Grazing Fee Technical Committee from analysis of 1966 survey data. Public costs are livestock operation costs on both FS and BLM allotments. Private costs are livestock operation costs on leased private grazing lands. Combined difference for cattle and sheep is weighted by the number of AUMs of grazing by cattle and sheep on public land.

Figure B.10 Percent of Beef Cattle Marketings, Percent of Private Leases Reported by AUM, and Percent of Combined Forest Service-BLM AUM's

State	FS/BLM AUM's	Beef Cattle Marketings	Private Leases (AUM)
----- percent of total -----			
Arizona	9.3	2.1	0.5
California	5.3	7.9	3.4
Colorado	7.7	13.9	5.9
Idaho	10.3	4.2	2.7
Kansas	0.2	16.1	21.6
Montana	9.0	2.6	14.7
Nebraska	0.6	28.9	17.4
Nevada	10.1	*	0.2
New Mexico	13.1	0.6	0.5
North Dakota	2.6	1.8	8.1
Oklahoma	0.1	4.0	4.0
Oregon	7.9	0.8	5.4
South Dakota	2.4	10.6	5.4
Utah	8.2	0.5	1.3
Washington	0.9	5.0	5.7
Wyoming	12.1	1.0	3.3

* Marketing data is not available for Nevada

B.11 Construction of the Input Cost Index (ICI)

The modified ICI is based on the distribution of the total cash expenses for the production costs of cow-calf operations of all sizes in the western United States. Data for 1980 through 1983 are published in the ERS Economic Indicators of the Farm Section: Costs of Production. The distribution of expenses for 1984 is a projection. The following table shows the distribution of expenses which are used for weighting and the selected components used to compute the ICI.

Distribution of Cash Expenses for Cost of Production per cow for Western cow-calf operations (1980-84) <u>1/</u>				Prices Paid Index Components used to compute ICI	
Expense	Percent of Total			Component	Weight Assigned
	Low	Range	High		
Feed	41.9	43.2	42.6	Feed	42.6
Veterinary & Medicine	2.2	2.6	2.5	Farm Services & Cash Rent	2.5
Livestock Hauling	0.9	1.1	1.0	Farm Services & Cash Rent	1.0
Marketing	1.2	1.5	1.4	Farm Services & Cash	1.4
Fuel, Lube & Electricity	6.3	7.2	6.7	Fuels & Energy	6.7
Machinery Repairs	6.4	7.8	7.2	Tractor & S-P Mach	7.2
Hired Labor	8.3	8.8	8.5	Wage Rates	8.5
General Farm Overhead	4.4	5.3	4.8	Building & Fencing	4.8
Taxes & Insurance	5.9	7.3	6.3	Taxes	6.3
Interest	17.9	19.9	19.0	Interest - NonReal Estate <u>2/</u>	19.0
Total	----	----	100.0	Total	100.0
Average Total Cash Expense		\$250	-----		-----

1/ Total Cash Expenses based on Cost of Production Budget by Cost per Cow for Cow-Calf Operations, All Herd Sizes, West Region. Published in Economic Indicators of the Farm Sector -- Cost of Production issued by Economic Research Service. Data used for 1984 unpublished projections.

2/ Interest Rate for non-real estate loans based on data from ERS Economic Indicators of the Farm Sector: Income and Balance Sheet.

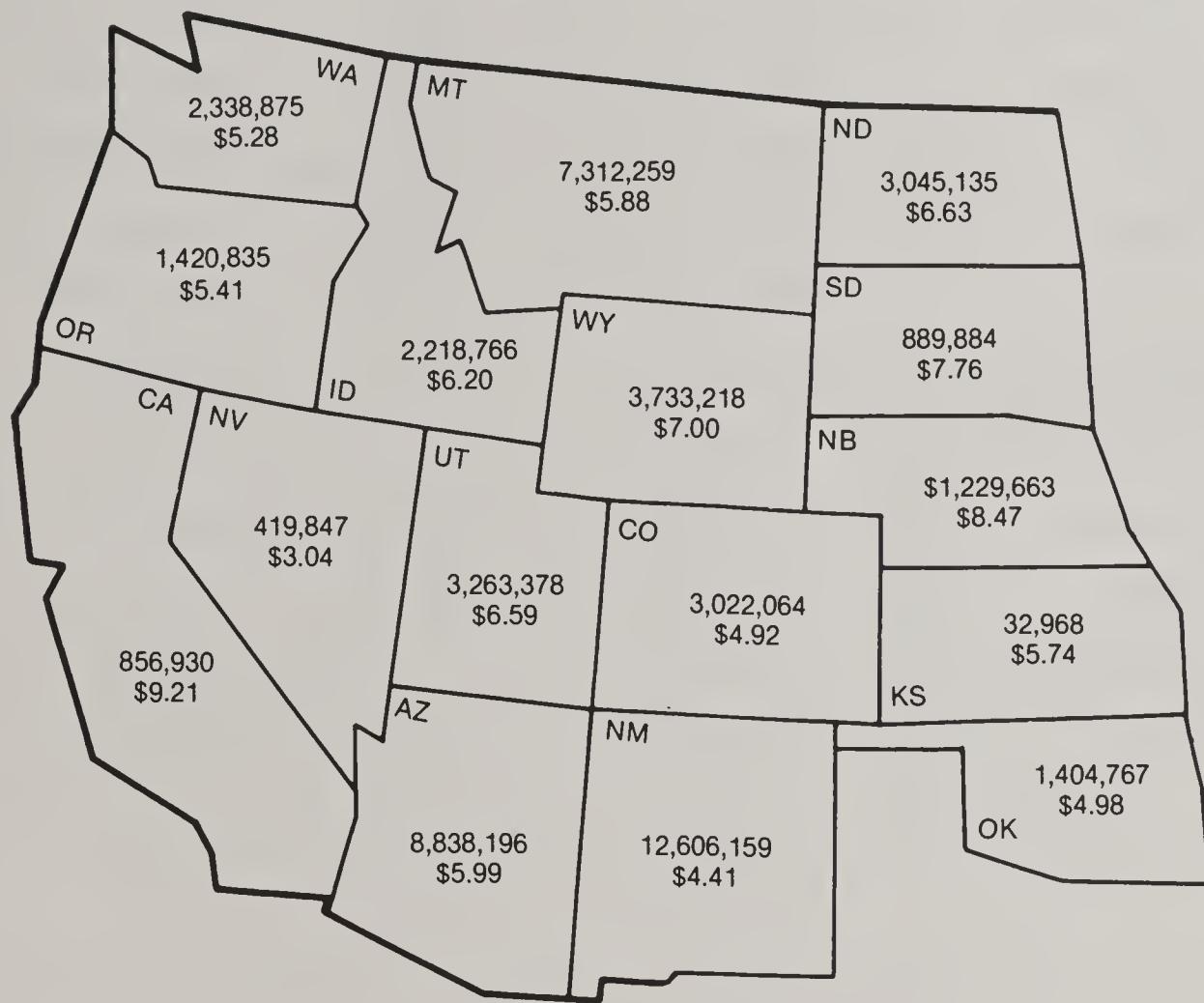
February 1985

Figure B.12 Comparison of National Prices Paid for Production Index (PPI),
PRIA's Prices Paid Index (PRIA-PPI), Consumer Price Index (CPI),
and the Input Cost Index (ICI)

Year	National PPI (1910-14=100)	PRIA- PPI (1964-68=100)	CPI (1967=100)	ICI (1944-68=100)
1964	270	95	93	96
1965	277	97	95	98
1966	289	99	97	101
1967	290	103	100	104
1968	290	107	104	101
(1964-1968)	(283.2)	(100)	(97.2)	(100)
1969	302	113	110	107
1970	313	118	116	112
1971	328	124	121	117
1972	351	130	125	117
1973	424	140	133	144
1974	481	168	148	173
1975	528	198	161	182
1976	559	215	171	187
1977	579	230	181	194
1978	628	246	194	197
1979	720	275	215	220
1980	798	319	245	248
1981	855	359	270	279
1982	865	378	288	274
1983	883	387	298	277
1984	896	395	311	285
Increases over base	884/283.2=	387/100=	298/97.2=	277/100=
	312%	387%	307%	277%

Source: USDA - Statistical Reporting Service

Figure B.13 Number of Acres of Government Grazing Lands and the Combined Average of State, Local, and Federal Agency Grazing Fees



Excluding BLM and the Forest Service (Dollars per AUM)

Figure B.14 Grazing Fees Collected by State Land Boards or Education Departments for 1981

State	Acres	\$/AUM	Fee Determination
Arizona	8,775,023	\$1.43	Formula
California	92,877	\$1.70	Varies
Colorado	2,724,698	\$3.00	Board Set
Idaho	2,090,000	\$4.25	Bids & Board Set
Montana	4,090,430	\$3.47	Formula
Nebraska	1,235,346	\$14.00	Board Set
New Mexico	10,962,097	\$1.60	Formula
North Dakota	705,000		Auction
Oklahoma	625,000	\$5.70	Formula
Oregon	607,916	\$2.50	Board Set
South Dakota	845,305		Formula
Utah	2,814,726	\$2.36	Board Set
Washington	885,638	\$3.37	Varies
Wyoming	3,614,887	\$1.65	Formula

Figure B.15 Summary of Statistics for State Wildlife Agencies and Other Federal Agencies, 1981

<u>State</u>	<u>Acres</u>	<u>\$/AUM</u>	<u>Fee Determination Method</u>
<u>Wildlife Agencies</u>			
Colorado	50,000	\$8.00	Bids
Idaho	4,800	\$8.50	Bids
Kansas	8092	10.21	Bids
Montana	n.a.	\$11.00	Bids
Nebraska	1,003	\$6.45	Negotiated
Nevada	91,045	\$4.00	Bids
New Mexico	60,000	\$5.00	Bids
North Dakota	13,450	\$7.00	Private Rates
Oregon	79,921	\$5.84	Private Rates
Utah	140,174	\$5.44	Bids, Formula
Washington	163,715	\$4.25	Varies
Wyoming	54,347	\$11.00	Bids
<u>Other Federal Agencies</u>			
Agricultural Research Service	165,735	Varies	
Air Force	87,102	Bids	
Corps of Engineers	421,241	Bids	
Army	155,492	Bids	
Navy-Marines	85,818	Bids	
Bureau of Indian Affairs	7,900,841	Bids + Private Rates	
Bureau of Reclamation	230,556	Varies	
Fish and Wildlife Service	1,987,569	Private Rates	
National Park Service	1,606,651	PRIA	
Coast Guard	225	Private Rates	

Figure B. 16: Sources and Uses of Cash Income for General Livestock Farms in 13 Western States and Oklahoma by Debt/Asset Ratio, 1984. 1/

--Items----	--Debt to Asset Ratio--				
	Over 100 pct.	70-100 pct.	40-70 pct.	0-40 pct.	All Farms
Number of Farms	3,066	4,438	16,921	111,382	135,808
Percent of All Farms	2	3	13	82	100
Cash Sales	246,681	193,268	105,417	57,420	72,113
+ Other Farm Income	11,394	16,511	6,147	5,172	5,805
= Gross Farm Income	258,075	209,778	111,564	62,592	77,918
- Generating Expenses Less Interest	226,136	166,127	105,996	52,192	66,546
- Interest Paid	52,029	39,935	27,147	6,030	10,808
= Net Cash Operating Margin	-20,090	3,717	-21,579	4,370	563
+ Off Farm Income	7,996	8,254	14,962	30,946	27,694
= Total Cash Available	-12,095	11,971	-6,617	35,316	28,258
- Family Living Expenses 2/	12,950	12,950	12,950	12,950	12,950
- Principal Payments 3/	43,572	32,738	21,341	3,724	7,767
= Cash Surplus or Short Fall	-68,617	-33,717	-40,909	18,642	7,541
Total Value of Owned Assets	396,624	454,722	460,867	488,650	482,001
Total Value of Debt	506,654	380,679	248,156	43,299	90,311
Debt Asset Ratio	1.28	0.84	.54	.09	.19
Debt as Percent of All Debt	13	14	34	39	100
Assets as Percent of All Assets	2	3	12	83	100
Cash Balance as Percent of Cash Sales				32	10
Cash Balance as Percent of Total Assets				4	2
Percent of Farms in Each Debt to Asset Class with Negative Cash Balance	89	78	73	48	53

1/ General Livestock Farms according to SIC definition. The 13 States are Arizona, California, Colorado, Idaho, Montana, Nebraska, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, Wyoming and Oklahoma.,

2/ Family Living Expenses = 1983 median family income for nonmetro counties minus imputed farm-dwelling rental value and income tax due.

3/ Principal payments = .086* debt.

* Assume debt is 50 percent real estate with 20 years remaining and 50 percent intermediate-term debt amortized over 5 years.

Figure B.17 Bureau of Land Management Administrative Units in Relationship to Pricing Areas

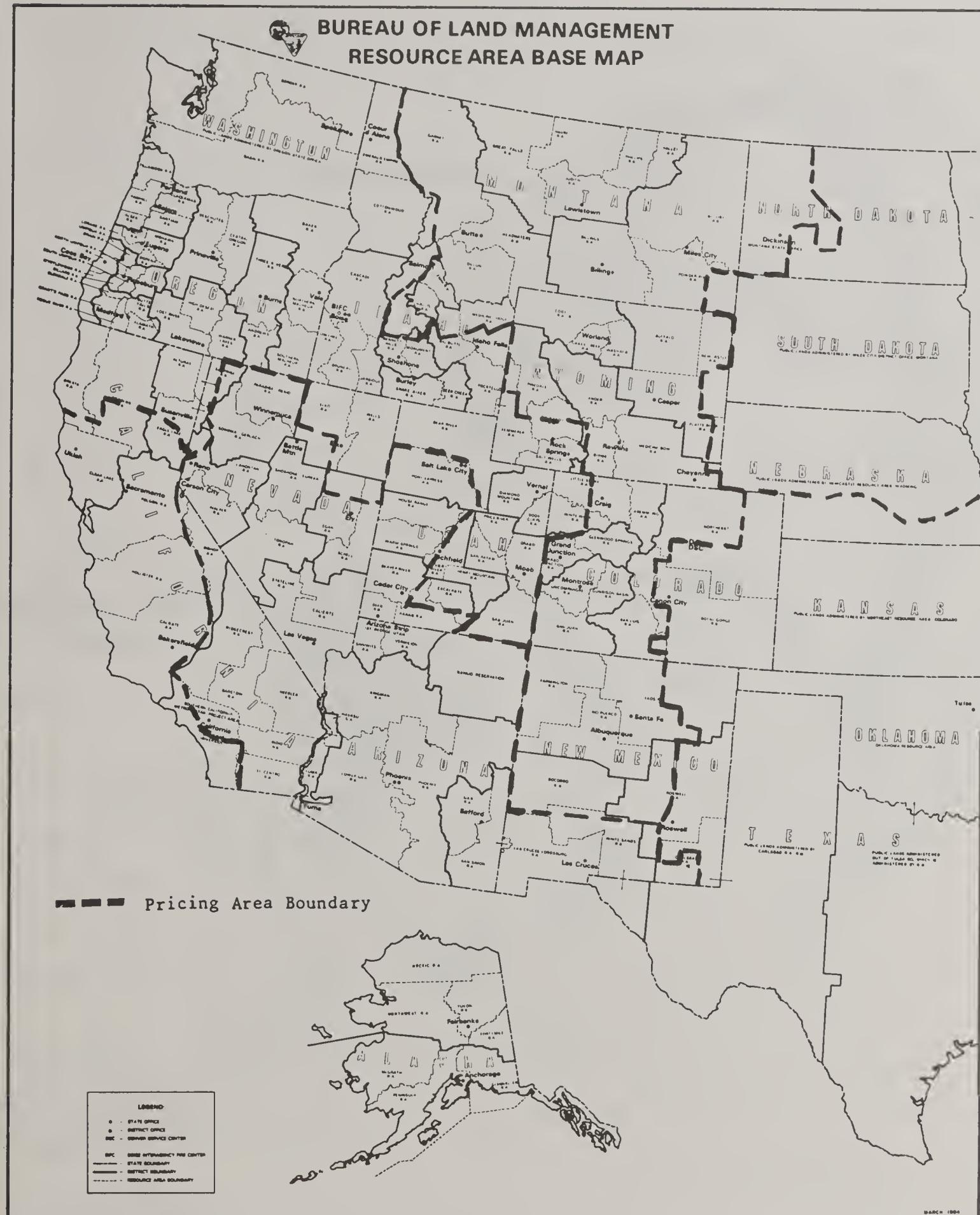
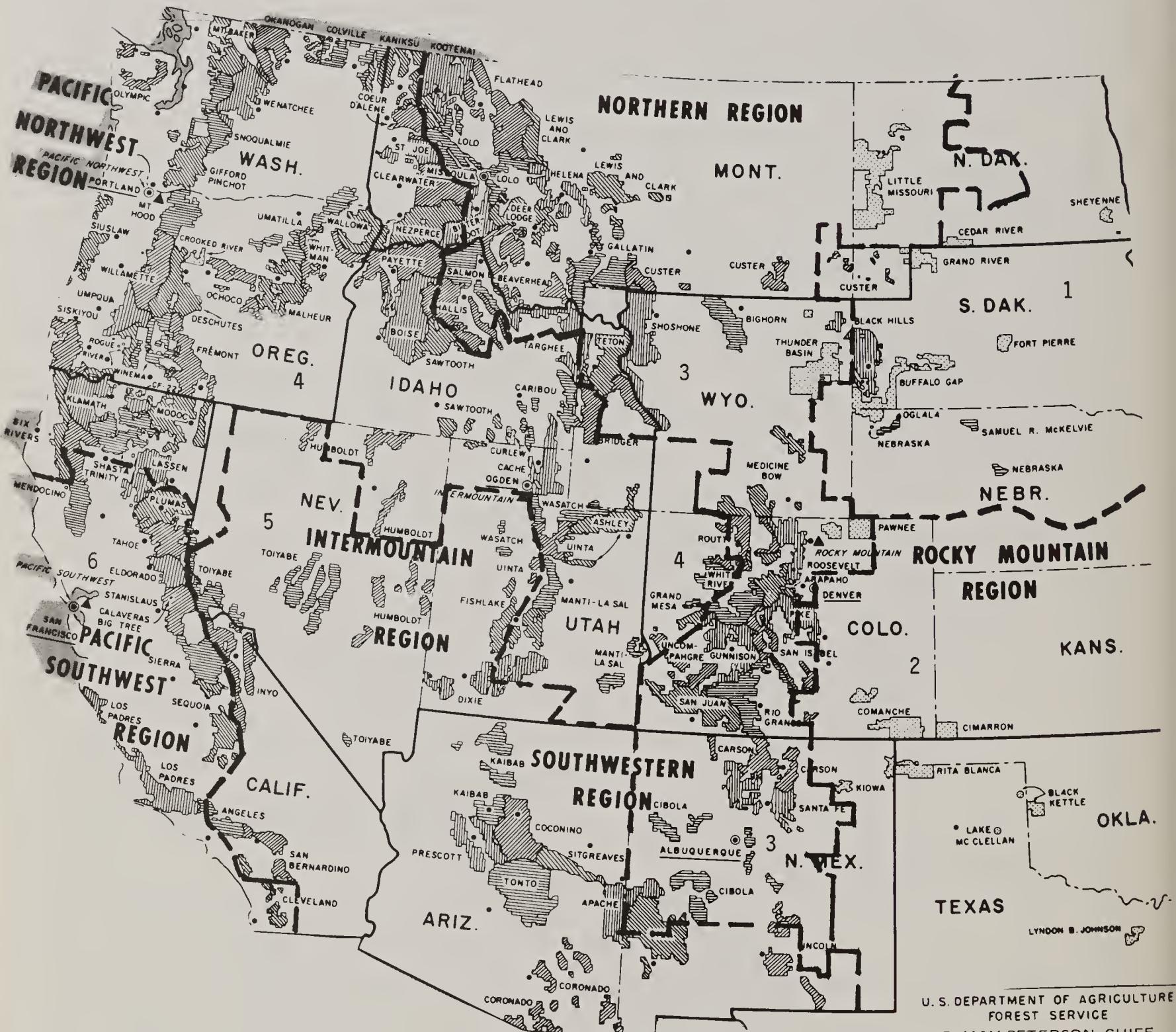


Figure B. 18 Forest Service Administrative Units in Relationship to Pricing Areas



U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R. MAX PETERSON, CHIEF

NATIONAL FORESTS AND FOREST SERVICE FIELD OFFICES

MILES
5 10 15 20

- [Symbol] NATIONAL FORESTS
- [Symbol] PURCHASE UNITS
- [Symbol] NATIONAL GRASSLANDS
- [Symbol] LAND UTILIZATION PROJECTS
- [Symbol] REGIONAL BOUNDARIES
- (○) REGIONAL HEADQUARTERS
- (●) SUPERVISOR'S HEADQUARTERS
- (▲) FOREST AND RANGE EXPERIMENT STATIONS
- (★) LABORATORY (MADISON, WIS)
- (□) AREA DIRECTOR STATE AND PRIVATE FORESTRY PROGRAMS

GLOSSARY

Allotment - An area designated for the use of a prescribed number and kind of livestock. May be all Federal ownership or any combination of Federal and private lands. May consist of several or only one pasture.

Animal Month (AM) - For grazing fee purposes, an AM is a month's use and occupancy of range by one weaned or adult cow, bull, steer, heifer, horse, burro, or mule, or five sheep or five goats.

Animal Unit Month (AUM) - Forage required to sustain one animal unit (AU) for 1 month. An AU is considered to be one mature cow or equivalent.

Grazing Lease/Permit - A document authorizing use of the public lands for the purpose of grazing livestock.

Grazing Year/Fee Year - March 1 to February 28

National Grasslands - Lands administered by the Forest Service but are excluded from the definition of rangelands in the Public Rangelands Improvement Act of 1978. For that reason, they are excluded from the definition of rangelands in this report.

Nonuse - An authorization to refrain from grazing livestock without loss of preference for further consideration.

Public Rangelands - As used in this report, are defined by the Public Rangelands Improvement Act as those lands ". . . administered by the Secretary of the Interior through the Bureau of Land Management or the Secretary of Agriculture through the Forest Service in the 16 contiguous Western States on which there is domestic livestock grazing or which the Secretary concerned determines may be suitable for domestic livestock grazing." The 16 Western States are Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington, and Wyoming.

Range Betterment Funds - Portion of grazing fees paid that is prescribed to be used for range improvements.

Range Improvement - Any activity or program on or relating to rangelands which is designed to improve production of forage, change vegetation composition, control patterns of use, provide water, stabilize soil and water conditions, and provide habitat for livestock and wildlife. The term includes, but is not limited to, structure, treatment projects, and use of mechanical means to accomplish the desired result.

Take-ins - Private lands lease arrangements where lessor also provides day to day care of livestock

Term Permit - A document authorizing grazing for a stated number of years (usually 10) as contrasted to an annual or temporary permit.

Westwide - As used in the report refers to the 16 Western States inclusive.

Yearlings - Weaned cattle (both sexes) over 6 and under 18 months of age.

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